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| <b>TRANSMITTAL FORM</b><br><br>(to be used for all correspondence after initial filing) | Application Number     | 09/630,604     |
|   | Filing Date            | August 1, 2000 |
|   | First Named Inventor   | Masood Garahi  |
|   | Art Unit               | 3714           |
|   | Examiner Name          | Scott E. Jones |
| Total Number of Pages in This Submission  | Attorney Docket Number | ODS-23         |

| ENCLOSURES (Check all that apply)   |   |   |
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| Firm Name                                  | Fish & Neave IP Group<br>Ropes & Gray LLP |          |        |
| Signature                                  |   |          |        |
| Printed name                               | James A. Leiz                             |          |        |
| Date                                       | May 1, 2007                               | Reg. No. | 46,109 |

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PATENTS

Attorney Docket No. ODS-23

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES



Applicants/ : Masood Garahi et al.  
Appellants

Application No. : 09/630,604 Confirmation No. : 8445

Filed : August 1, 2000

For : INTERACTIVE WAGERING SYSTEM WITH  
WIRELESS WAGERING CAPABILITIES

Group Art Unit : 3714

Examiner : Scott E. Jones

New York, NY 10036  
May 1, 2007

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AMENDED APPEAL BRIEF

Sir:

In response to the April 6, 2007 Notification of Non-Compliant Appeal Brief, Appellants are submitting this Amended Appeal Brief pursuant to 37 C.F.R. § 41.37(d). Pursuant to MPEP § 1205.03, this Amended Appeal Brief is a complete new brief including the required corrections.

Appellants believe that no fee is required in connection with this Amended Appeal Brief. However, the Director is hereby authorized to charge any fees that may

be due, or credit any overpayment of the same, to Deposit Account No. 06-1075 (Order No. 003043-0023).

I. Introduction

In the Final Office Action dated July 8, 2004, the Examiner finally rejected claims 1-86 and 91-133 under 35 U.S.C. § 103(a) as being obvious from Brenner et al. U.S. Patent No. 6,004,211 (hereinafter "Brenner") in view of Lappington et al. U.S. Patent No. 5,734,413 (hereinafter "Lappington"). Claims 142-144 were finally rejected under 35 U.S.C. § 103(a) as being obvious from Brenner in view of Lappington. Claims 89, 90, and 134-141 were finally rejected under 35 U.S.C. § 103(a) as being obvious from Brenner in view of LaDue U.S. Patent No. 5,999,808 (hereinafter "LaDue").

In view of the arguments and authorities set forth below, the Board should find these rejections to be in error and should reverse the Examiner.

II. Appendices

This Brief has the following appendices:

Claims Appendix

Appendix A: Copy of claims 1-86, 89-133, and 135-144 involved in this appeal;

Evidence Appendices

Appendix B: Copy of the Final Office Action dated July 8, 2004;

Appendix C: Copy of Brenner et al. U.S. Patent No. 6,004,211;

Appendix D: Copy of Lappington et al. U.S. Patent No. 5,734,413; and

Appendix E: Copy of LaDue U.S. Patent No. 5,999,808.

Related Proceedings Appendix

None.

III. Identification of Real Party in Interest

Applicants/Appellants respectfully advise the Board that the real party in interest in the above-identified patent application is ODS Properties, Inc., a corporation organized and existing under the laws of the State of Delaware, and having an office and place of business at 6701 Center Drive West, Los Angeles, CA 90045, which is the assignee of this application.

IV. Related Appeals and Interferences

Applicants/Appellants respectfully advise the Board that there are no other appeals or interferences known to applicants/appellants, their legal representative, or their assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.



V. Status of Claims

Claims 1-86, 89-133, and 135-144 are rejected in this application and are on appeal. Claims 87, 88, and 134 have been cancelled.

VI. Status of Amendments

Applicants/Appellants filed an amendment pursuant to 37 C.F.R. § 1.116 on June 6, 2005 to correct clerical errors in several dependent claims. This amendment has not yet been entered.

VII. Summary of Claimed Subject Matter

Applicants/Appellants' invention, as defined by independent claims 1, 44, and 91, is directed towards a method, system, and computer readable medium for submitting electronic wagers on races that are to be run to computer equipment over a communications network. At least one wireless portable computing device with a display is in two-way wireless communications with in-home user equipment (see, e.g., page 32, lines 9-21; page 33, lines 6 and 7; FIG. 2, reference numerals 146, 148, 44r). A user at the wireless portable computing device is provided with on-screen options on the display of the wireless portable computing device that allow the user to create a wager (see, e.g., page 41, lines 13-21). The on-screen options are based, at least in part, on information received over a

wireless communications path between the wireless portable computing device and the in-home user equipment (see, e.g., page 33, lines 12-27). The information is based, at least in part, on racing data received by the in-home user equipment from the communications network (see, e.g., page 13, lines 17-21; page 33, lines 12-16). The user is allowed to wirelessly transmit the wager from the wireless portable computing device to the in-home user equipment over the wireless communications path when it is desired to submit the wager for processing (see, e.g., page 41, line 30 to page 42, line 10; FIG. 9, reference numeral 154).

Applicants/Appellants' invention, as defined by independent claims 142-144, is directed towards a method, system, and computer readable medium for submitting electronic wagers on races that are to be run to computer equipment over a communications network. At least one wireless portable computing device with a display is in two-way wireless communications with a television set-top box (see, e.g., page 2, lines 17-19; page 32, lines 9-21; page 33, lines 6 and 7; FIG. 2, reference numerals 146, 148, 44r). A user at the wireless portable computing device is provided with on-screen options on the display of the wireless portable computing device that allow the user to create a wager (see, e.g., page 41, lines 13-21). The

on-screen options are based, at least in part, on information received over a wireless communications path between the wireless portable computing device and the television set-top box (see, e.g., page 33, lines 12-27). The information is based, at least in part, on racing data received by the television set-top box from the communications network (see, e.g., page 13, lines 17-21; page 33, lines 12-16). The user is allowed to wirelessly transmit the wager from the wireless portable computing device to the television set-top box over the wireless communications path when it is desired to submit the wager for processing (see, e.g., page 41, line 30 to page 42, line 10; FIG. 9, reference numeral 154).

Applicants/Appellants' invention, as defined by claims 89, 90, and 135, is directed towards a method, system, and computer readable medium for wirelessly submitting electronic wagers to computer equipment. The user is allowed to create a wager with wireless user equipment (see, e.g., page 2, lines 24-26; page 31, lines 1-12; FIG. 2, reference numeral 144) and is allowed to transmit that wager from the wireless user equipment to a communications network via communications equipment at a racetrack that communicates wirelessly with the wireless user equipment (see, e.g., page 29, lines 4-6 and 25-30;

page 42, lines 10-14; FIG. 2, reference numeral 44s). The wager is received at the computer equipment for processing from communications equipment at the racetrack over the communications network (see, e.g., page 42, lines 14-17; FIG. 2, reference numeral 44t).

#### VIII. Grounds of Rejection to be Reviewed on Appeal

The following grounds of rejection are to be reviewed on this appeal:

(a) claims 1-86 and 91-133 stand rejected under 35 U.S.C. § 103(a) as being obvious from Brenner in view of Lappington;

(b) claims 142-144 stand rejected under 35 U.S.C. § 103(a) as being obvious from Brenner in view of Lappington; and

(c) claims 89, 90, and 134-141 stand rejected under 35 U.S.C. § 103(a) as being obvious from Brenner in view of LaDue.

#### IX. Argument

##### A. Rejection of Claims 1-86 and 91-133 Under 35 U.S.C. § 103(a)

In the Final Office Action dated July 8, 2004, the Examiner rejected claims 1-86 and 91-133 under 35 U.S.C. § 103(a) as being obvious from Brenner in view of Lappington. Applicants/Appellants respectfully traverse

this rejection and request that it be overturned for at least the reasons set forth below.

1. Brenner Teaches Away From A Combination of Brenner and Lappington

Applicants/Appellants submit that Brenner teaches away from a combination of Brenner and Lappington. In particular, Brenner teaches away from the transfer of the wagering screens of Brenner onto wireless handheld device 32 of Lappington.

a. Handheld 32 of Lappington Does Not Support Graphics

Brenner teaches in the Background of the Invention that one of the downsides to using prior wagering systems such as TinyTim and BetMate is that it is difficult "to display racing information in a way that may be easily viewed by the user" on these systems (Brenner, column 1, lines 55 and 56). Brenner, therefore, teaches providing an easy-to-read graphical user interface on, for example, a television monitor, to allow users to create and place wagers on horse races (see Brenner, column 7, lines 21-26). For example, Brenner discusses displaying graphical objects, e.g., buttons, logo 176 (FIG. 8), cursor 192 (FIG. 8), runner icons 574 (FIG. 47), and map menu 446 (FIG. 35).

Handheld 32 of Lappington is only configured to display transactions as text (see Lappington, column 11, lines 25-32 and column 20, lines 11 and 12). Therefore, if the wagering screens of Brenner were to be implemented on handheld 32 of Lappington, then the wagering screens of Brenner would have to be displayed as text. As a result, none of the graphical objects displayed in the wagering screens of Brenner would be able to be displayed on handheld 32 of Lappington.

Accordingly, modifying Brenner by transferring the wagering screens of Brenner onto handheld 32 of Lappington in the form of text would take away from Brenner's easy-to-read graphical user interface. Because Brenner teaches using an easy-to-read graphical user interface and because modifying Brenner would take away from the easy-to-read graphical user interface, Brenner teaches away from transferring the wagering screens of Brenner onto handheld 32 of Lappington.

b. LCD Display 398 of Handheld 32 of Lappington Is Too Small to Display the Information in the Wagering Screens of Brenner

Lappington describes LCD display 398 of handheld 32 of Lappington as "a 4-line by 16 character display" (Lappington, column 20, lines 11 and 12). This relatively

small display would not be capable of displaying all of the information displayed in Brenner's wagering screens. For example, a text version of the wagering screen shown in FIG. 20 of Brenner would include at least eleven lines of text and the number of characters on each line would easily exceed the 16-character limit of LCD display 398.

Even if handheld 32 of Lappington could be modified to utilize, for example, scroll bars to display the wagering screens of Brenner, it would be cumbersome for users to operate the scroll bars to view information on the wagering screens. Accordingly, Brenner teaches away from transferring its wagering screens onto handheld 32 of Lappington because the display of handheld 32 of Lappington is not large enough to display the information on the wagering screens of Brenner.

For at least these reasons, applicants/appellants respectfully submit that the Board should reverse the obviousness rejection of independent claims 1, 44, and 91 under 35 U.S.C. § 103(a).

2. The Examiner Failed To Provide A Proper Motivation For Transferring The Wagering Interfaces Of Brenner To Handheld 32 Of Lappington

Furthermore, the Examiner has failed to provide a proper motivation for combining Brenner and Lappington to justify the assertion of a § 103 rejection. See In re Rouffet, 149 F.3d 1350, 1355 (Fed. Cir. 1998) ("When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references"); see also MPEP § 2142 and 2143.01. It is well-settled that an Examiner can "satisfy this burden only by showing some objective teaching ... that would lead [one of ordinary skill in the art] to combine the relevant teachings of the references." In re Fine, 837 F.2d 1071, 1074 (Fed. Cir. 1988).

a. The Examiner Does Not Provide Any Objective Evidence of Motivation for Providing Racing Videos and Informational/Wager Choices on Separate Displays

The Examiner states that "it would have been obvious to one skilled in the art at the time to display informational/wager choices on the PDA to allow the race to be displayed on a separate display continuously" (July 8, 2004 Final Office Action, lines 8-10). Applicants/Appellants respectfully submit that this



statement does not provide the proper motivation to one skilled in the art to attempt to display the wagering screens of Brenner on handheld 32 of Lappington.

Applicants/Appellants submit that Brenner already discusses displaying informational/wager choices and racing videos continuously (see, e.g., Brenner FIGS. 36-44, 46, and 48-50). Therefore, applicants/appellants assume that the Examiner believes there is motivation to provide informational/wager choices and racing videos on separate displays. However, the Examiner has not provided any such motivation. In fact, Brenner teaches displaying informational/wager choices and racing videos on the same screen - not separately (see, e.g., Brenner, FIGS. 36-50). Accordingly, the Examiner has failed to provide objective evidence of motivation for providing racing videos and informational/wager choices on separate displays.

b. "View[ing] Multiple Concurrent Events Without Losing Scores" Is Not a Proper Motivation to Transfer the Wagering Screens of Brenner on Handheld 32 of Lappington

The Examiner also contends that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Brenner et al. to use the wireless handheld taught by Lapp for the ... reasons taught by Lapp such as [to] view multiple concurrent events

without losing scores" (July 8, 2004 Final Office Action, page 3, lines 10-13).

Applicants/Appellants submit that it is not possible to apply the teaching of Lappington of "view[ing] multiple concurrent events without losing scores" to Brenner. In particular, there is no analogous "score" to be kept in Brenner. Thus, the purpose of Lappington to "view multiple concurrent events without losing scores," as set forth by the Examiner, has no relevance to Brenner. However, if one skilled in the art was forced to try to apply this teaching of Lappington to Brenner, it appears as though there would be more than one way to attempt to apply this teaching of Lappington to the wager creation process of Brenner.

One way to attempt to apply the teaching of Lappington to the wager creation process of Brenner is to liken the questions in Lappington to the wagers in Brenner. For example, answering a trivia question in Lappington may be analogized to creating a wager on a horse race in Brenner. In Lappington, although users may participate in many different interactive programs without losing scores, users are limited to answering one question at a time for a given interactive program. Similarly, in Brenner, users may place wagers for many different horse races, however

users are also limited to creating one wager at a time. A "score" may be considered to be kept in Brenner in that a user's account balance is adjusted based on the outcome of wagers (see Brenner, column 7, lines 35-54). Accordingly, in this attempted application of the teaching of Lappington to Brenner, Brenner already provides the functionality of "view[ing] concurrent events without losing scores" as Lappington. Therefore, there is no motivation to modify Brenner based on this teaching because Brenner already provides this functionality.

Another way to attempt to apply the teaching of Lappington to the wagering process of Brenner is to liken a series of questions for a television program in Lappington to a series of wager selections in Brenner. In Lappington, users may switch between television channels to participate in different interactive programs on handheld 32. In particular, Lappington states "where a viewer returns to a program that was previously watched, the interactive game continues, leaving out only the part [of the interactive game] that was missed" (column 4, lines 1-3). Thus, in Lappington, when a viewer changes channels to watch another program, the viewer misses certain trivia questions, although a total score is maintained by the handheld device. Attempting to apply this teaching of Lappington to

the wager creation process of Brenner would result in skipping certain steps in the wager creation process (e.g., selecting a track, selecting a horse, etc.), thereby rendering the wager creation process incomplete.

Accordingly, applying the teaching of Lappington of "view[ing] concurrent events without losing scores" to the wager creation process of Brenner would result in creating incomplete wagers in Brenner. Therefore, this teaches away from such a modification of Brenner.

Therefore, as stated above, it is not possible to apply the teaching of Lappington of "view[ing] concurrent events without losing scores" to Brenner because this teaching has no relevance to Brenner. Furthermore, even if one skilled in the art were to attempt to apply this teaching of Lappington to Brenner by likening the questions of Lappington to the wagers in Brenner, there is no motivation to modify Brenner based on this teaching because Brenner already provides this functionality. Furthermore, even if one skilled in the art were to attempt to apply this teaching of Lappington to Brenner by likening a series of questions for a television program in Lappington to a series of wager selections in Brenner, Brenner teaches away from applying this teaching because it would result in creating incomplete wagers.

c.     The Examiner's Motivation Would Not  
Lead One to Transfer the Wagering  
Screens of Brenner on Handheld 32 of  
Lappington

Applicants/Appellants respectfully submit even if "view[ing] concurrent events without losing scores" is a proper motivation, it would not lead one skilled in the art to provide the wagering interfaces of Brenner on handheld 32 of Lappington. To modify Brenner to allow users to view multiple concurrent events without losing scores, it would be reasonable to expect one of skill in the art to modify the software of Brenner that provides the wagering interfaces. It would not be reasonable to expect one of skill in the art to first modify Brenner by putting the wagering interfaces on a separate device (e.g., handheld 32 of Lappington), and then modify the software to allow users to view multiple concurrent events without losing scores.

For at least these reasons, applicants/appellants respectfully submit that the Board should reverse the obviousness rejection of independent claims 1, 44, and 91 under 35 U.S.C. § 103(a).

B.    Rejection of Claims 142-144  
      Under 35 U.S.C. § 103(a)

In the Final Office Action dated July 8, 2004, the Examiner rejected claims 142-144 under 35 U.S.C. § 103(a) as being obvious from Brenner in view of Lappington. Applicants/Appellants respectfully traverse this rejection and request that it be overturned for at least the reasons set forth below.

Applicants/Appellants' independent claims 142-144 include features that are similar to the features claimed in independent claims 1, 44, and 91. Accordingly, applicants/appellants submit that claims 142-144 are allowable over Brenner in view of Lappington for at least the reasons provided hereinabove in Section IX-A with respect to claims 1, 44, and 91.

For at least this reason, applicants/appellants respectfully submit that the Board should reverse the obviousness rejection of independent claims 142-144 under 35 U.S.C. § 103(a).

C.    Rejection of Claims 89, 90, and 134-141  
      Under 35 U.S.C. § 103(a)

In the Final Office Action dated July 8, 2004, the Examiner rejected claims 89, 90, and 134-141 under 35 U.S.C. § 103(a) as being obvious from Brenner in view of LaDue. Applicants/Appellants respectfully traverse this

rejection and request that it be overturned for at least the reasons set forth below.

Applicants/Appellants submit that the combination of Brenner and LaDue fails to show or suggest "allowing the user to transmit the wager from the wireless user equipment to a communications network via communications equipment at a racetrack that communicates wirelessly with the wireless user equipment" (emphasis added), as required by independent claims 89, 90, and 135. In particular, neither Brenner nor LaDue discusses communications equipment located at a racetrack for communicating wirelessly with wireless user equipment.

In Brenner, a user may place a wager on a race using user terminal 122 or 370, which is then transmitted to network 128 or 392 (see Brenner, FIGS. 1 and 29). Brenner does not specifically state that user terminal 122 or 370 wirelessly transmits wagers to network 128 or 392. Furthermore, Brenner also does not specifically state that network 128 or 392 is located at a racetrack.

LaDue teaches providing wireless gaming on cellular and paging networks "without having to modify existing network cellular and paging network infrastructures" (LaDue, column 2, lines 26-29). A user may wirelessly transmit a wager from a gaming terminal 100

to a base site 101 that is part of a cellular or paging network (see LaDue, FIG. 1B; column 7, lines 34-39).

However, LaDue does not specify that any of base sites 101 are located at a racetrack. Furthermore, even if a base site 101 could be added to a racetrack, LaDue teaches away from modifying the existing cellular or paging network infrastructure to enable wireless gaming and therefore teaches away from such an addition.

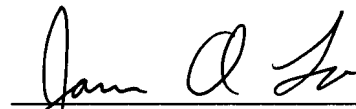
For at least these reasons, applicants/appellants respectfully submit that the Board should reverse the obviousness rejection of independent claims 89, 90, and 135 under 35 U.S.C. § 103(a).



X. Conclusion

For the reasons set forth above,  
applicants/appellants respectfully submit that claims 1-86,  
89-133, and 135-144 are in condition for allowance. The  
Examiner's rejections of these claims should be reversed.

Respectfully submitted,



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CLAIMS APPENDIX A  
CLAIMS ON APPEAL

1. A method for submitting electronic wagers on races that are to be run to computer equipment over a communications network using an interactive wagering application that is implemented using in-home user equipment and at least one wireless portable computing device with a display that is in two-way wireless communications with the in-home user equipment, comprising:

providing a user at the wireless portable computing device with on-screen options on the display of the wireless portable computing device that allow the user to create a wager for a given race to be run, wherein the on-screen options are based at least in part on information received over a wireless communications path between the wireless portable computing device and the in-home user equipment, and wherein the information is based at least in part on racing data received by the in-home user equipment from the communications network; and

allowing the user to wirelessly transmit the wager from the wireless portable computing device to the in-home user equipment over the wireless communications path when it is desired to submit the wager for processing; and

transmitting the wager from the in-home user equipment to the computer equipment over the communications network for processing.

2. The method defined in claim 1 wherein the race is a horse race, the method further comprising allowing the user to use the wireless portable computing device to select a horse for the wager.

3. The method defined in claim 1 further comprising providing the user with an opportunity to use the wireless portable computing device to select a racetrack for the wager.

4. The method defined in claim 1 further comprising providing the user with an opportunity to use the wireless portable computing device to select a race for the wager.

5. The method defined in claim 1 further comprising providing the user with an opportunity to use the wireless portable computing device to select a wager type for the wager.

6. The method defined in claim 1 further comprising providing the user with an opportunity to use

the wireless portable computing device to select a wager amount for the wager.

7. The method defined in claim 1, wherein the computer equipment is part of a transaction processing and subscription management system, the method further comprising processing the wager with the transaction processing and subscription management system once the wager has been placed.

8. The method defined in claim 1, wherein the race is a horse race and wherein an account is maintained for the user at a transaction processing and subscription management system, the method further comprising processing the wager once the wager has been placed and crediting the account when the wager is successful.

9. The method defined in claim 1, wherein the in-home user equipment includes user television equipment.

10. The method defined in claim 1, wherein the in-home user equipment includes a set-top box and wherein transmitting the wager from the in-home user equipment to the computer equipment over the communications network for processing comprises transmitting the wager from the set-

top box to the computer equipment over the communications network for processing.

11. The method defined in claim 1, wherein the in-home user equipment includes user computer equipment.

12. The method defined in claim 1, wherein the in-home user equipment includes a personal computer and wherein transmitting the wager from the in-home user equipment to the computer equipment over the communications network for processing comprises transmitting the wager from the personal computer to the computer equipment over the communications network for processing.

13. The method defined in claim 1, wherein the wireless portable computing device is a handheld computer, the method further comprising using the handheld computer to wirelessly receive handicapping information from the in-home user equipment.

14. The method defined in claim 1, wherein the wireless portable computing device is a handheld computer and the in-home user equipment is a set-top box, the method further comprising using the handheld computer to wirelessly receive handicapping information from the set-top box.

15. The method defined in claim 1, wherein the wireless portable computing device is a handheld computer and the in-home computing device is a personal computer, the method further comprising using the handheld computer to wirelessly receive handicapping information from the personal computer.

16. The method defined in claim 1, wherein the wireless portable computing device is a handheld computer, the method further comprising using the handheld computer to wirelessly receive race results from the in-home user equipment.

17. The method defined in claim 1, wherein the wireless portable computing device is a handheld computer and the in-home user equipment is a set-top box, the method further comprising using the handheld computer to wirelessly receive race results from the set-top box.

18. The method defined in claim 1, wherein the wireless portable computing device is a handheld computer and the in-home computing device is a personal computer, the method further comprising using the handheld computer to wirelessly receive race results from the personal computer.

19. The method defined in claim 1, wherein the wireless portable computing device is an electronic book, the method further comprising using the electronic book to wirelessly receive handicapping information from the in-home user equipment.

20. The method defined in claim 1, wherein the wireless portable computing device is an electronic book and the in-home user equipment is a set-top box, the method further comprising using the electronic book to wirelessly receive handicapping information from the set-top box.

21. The method defined in claim 1, wherein the wireless portable computing device is an electronic book and the in-home computing device is a personal computer, the method further comprising using the electronic book to wirelessly receive handicapping information from the personal computer.

22. The method defined in claim 1, wherein the wireless portable computing device is an electronic book, the method further comprising using the electronic book to wirelessly receive racing results from the in-home user equipment.

23. The method defined in claim 1, wherein the wireless portable computing device is an electronic book and the in-home user equipment is a set-top box, the method further comprising using the electronic book to wirelessly receive racing results from the set-top box.

24. The method defined in claim 1, wherein the wireless portable computing device is an electronic book and the in-home computing device is a personal computer, the method further comprising using the electronic book to wirelessly receive racing results from the personal computer.

25. The method defined in claim 1, wherein the wireless portable computing device is a web tablet, the method further comprising using the web tablet to wirelessly receive handicapping information from the in-home user equipment.

26. The method defined in claim 1, wherein the wireless portable computing device is a web tablet and the in-home user equipment is a set-top box, the method further comprising using the web tablet to wirelessly receive handicapping information from the set-top box.



27. The method defined in claim 1, wherein the wireless portable computing device is a web tablet and the in-home computing device is a personal computer, the method further comprising using the web tablet to wirelessly receive handicapping information from the personal computer.

28. The method defined in claim 1, wherein the wireless portable computing device is a web tablet, the method further comprising using the web tablet to wirelessly receive racing results from the in-home user equipment.

29. The method defined in claim 1, wherein the wireless portable computing device is a web tablet and the in-home user equipment is a set-top box, the method further comprising using the web tablet to wirelessly receive racing results from the set-top box.

30. The method defined in claim 1, wherein the wireless portable computing device is a web tablet and the in-home computing device is a personal computer, the method further comprising using the web tablet to wirelessly receive racing results from the personal computer.

31. The method defined in claim 1 further comprising allowing multiple users to access the interactive wagering application using a plurality of the wireless portable computing devices.

32. The method defined in claim 1, wherein the in-home user equipment communicates wirelessly with a plurality of wireless portable computing devices, the method comprising allowing multiple users at the plurality of wireless portable computing devices to each use a respective one of the plurality of wireless portable computing devices to place an independent wager through the in-home user equipment.

33. The method defined in claim 1, wherein the in-home user equipment is a set-top box that communicates wirelessly with a plurality of wireless portable computing devices, the method comprising allowing multiple users at the plurality of wireless portable computing devices to each place an independent wager through the set-top box.

34. The method defined in claim 1, wherein the in-home user equipment is a personal computer that communicates wirelessly with a plurality of wireless portable computing devices, the method comprising allowing multiple users at the plurality of wireless portable

computing devices to each place an independent wager through the personal computer.

35. The method defined in claim 1, wherein the in-home user equipment communicates wirelessly with a plurality of handheld computers, the method comprising allowing multiple users at the plurality of handheld computers to each place an independent wager through the in-home user equipment.

36. The method defined in claim 1, wherein the in-home user equipment is a set-top box that communicates wirelessly with a plurality of handheld computers, the method comprising allowing multiple users at the handheld computers to each place an independent wager through the set-top box.

37. The method defined in claim 1, wherein the in-home user equipment is a personal computer that communicates wirelessly with a plurality of handheld computers, the method comprising allowing multiple users at the plurality of handheld computers to each place an independent wager through the personal computer.

38. The method defined in claim 1, wherein the in-home user equipment communicates wirelessly with a

plurality of web tablets, the method comprising allowing multiple users at the plurality of web tablets to each place an independent wager through the in-home user equipment.

39. The method defined in claim 1, wherein the in-home user equipment is a set-top box that communicates wirelessly with a plurality of web tablets, the method comprising allowing multiple users at the plurality of web tablets to each place an independent wager through the set-top box.

40. The method defined in claim 1, wherein the in-home user equipment is a personal computer that communicates wirelessly with a plurality of web tablets, the method comprising allowing multiple users at the plurality of web tablets to each place an independent wager through the personal computer.

41. The method defined in claim 1, wherein the in-home user equipment communicates wirelessly with a plurality of electronic books, the method comprising allowing multiple users at the plurality of electronic books to each place an independent wager through the in-home user equipment.

42. The method defined in claim 1, wherein the in-home user equipment is a set-top box that communicates wirelessly with a plurality of electronic books, the method comprising allowing multiple users at the plurality of electronic books to each place an independent wager through the set-top box.

43. The method defined in claim 1, wherein the in-home user equipment is a personal computer that communicates wirelessly with a plurality of electronic books, the method comprising allowing multiple users at the plurality of electronic books to each place an independent wager through the personal computer.

44. An interactive wagering system that provides a user with an opportunity to submit electronic wagers on races that are to be run to computer equipment over a communications network using an interactive wagering application, comprising:

in-home user equipment; and

at least one wireless portable computing device with a display that is in two-way wireless communication with the in-home user equipment, wherein the in-home user equipment and the wireless portable computing device are configured to:

provide the user with on-screen options on the display of the wireless portable computing device that allow the user to create a wager for a given race to be run, wherein the on-screen options are based at least in part on information received over a wireless communications path between the wireless portable computing device and the in-home user equipment, and wherein the information is based at least in part on racing data received by the in-home user equipment from the communications network; and

allow the user to wirelessly transmit the wager from the wireless portable computing device to the in-home user equipment over the wireless communications path when it is desired to submit the wager for processing; and

transmit the wager from the in-home user equipment to the computer equipment over the communications network for processing.

45. The system defined in claim 44 wherein the race is a horse race and wherein the in-home user equipment and the wireless portable computing device are further configured to allow the user to use the wireless portable computing device to select a horse for the wager.

46. The system defined in claim 44 wherein the in-home user equipment and the wireless portable computing device are further configured to provide the user with an opportunity to use the wireless portable computing device to select a racetrack for the wager.

47. The system defined in claim 44 wherein the in-home user equipment and the wireless portable computing device are further configured to provide the user with an opportunity to use the wireless portable computing device to select a race for the wager.

48. The system defined in claim 44 wherein the in-home user equipment and the wireless portable computing device are further configured to provide the user with an opportunity to use the wireless portable computing device to select a wager type for the wager.

49. The system defined in claim 44 wherein the in-home user equipment and the wireless portable computing device are further configured to provide the user with an opportunity to use the wireless portable computing device to select a wager amount for the wager.

50. The system defined in claim 44 wherein the computer equipment is part of a transaction processing and

subscription management system and wherein the transaction processing and subscription management system is configured to process the wager once the wager has been placed.

51. The system defined in claim 44, wherein the race is a horse race and wherein an account is maintained for the user at a transaction processing and subscription management system and wherein the transaction processing and subscription management system is configured to process the wager once the wager has been placed and is configured to credit the account when the wager is successful.

52. The system defined in claim 44 wherein the in-home user equipment includes user television equipment.

53. The system defined in claim 44 wherein the in-home user equipment includes a set-top box configured to transmit the wager to the computer equipment over the communications network for processing.

54. The system defined in claim 44, wherein the in-home user equipment includes user computer equipment.

55. The system defined in claim 44, wherein the in-home user equipment includes a personal computer that is configured to transmit the wager to the computer equipment over the communications network for processing.



56. The system defined in claim 44, wherein the wireless portable computing device is a handheld computer configured to wirelessly receive handicapping information from the in-home user equipment.

57. The system defined in claim 44, wherein the in-home user equipment is a set-top box and the wireless portable computing device is a handheld computer configured to wirelessly receive handicapping information from the set-top box.

58. The system defined in claim 44, wherein the in-home user equipment is a personal computer and the wireless portable computing device is a handheld computer configured to wirelessly receive handicapping information from the personal computer.

59. The system defined in claim 44, wherein the wireless portable computing device is a handheld computer configured to wirelessly receive race results from the in-home user equipment.

60. The system defined in claim 44, wherein the in-home user equipment is a set-top box and the wireless portable computing device is a handheld computer configured to wirelessly receive race results from the set-top box.

61. The system defined in claim 44, wherein the in-home user equipment is a personal computer and the wireless portable computing device is a handheld computer configured to wirelessly receive race results from the personal computer.

62. The system defined in claim 44, wherein the wireless portable computing device is an electronic book configured to wirelessly receive handicapping information from the in-home user equipment.

63. The system defined in claim 44, wherein the in-home user equipment is a set-top box and the wireless portable computing device is an electronic book configured to wirelessly receive handicapping information from the set-top box.

64. The system defined in claim 44, wherein the in-home user equipment is a personal computer and the wireless portable computing device is an electronic book configured to wirelessly receive handicapping information from the personal computer.

65. The system defined in claim 44, wherein the wireless portable computing device is an electronic book

configured to wirelessly receive racing results from the in-home user equipment.

66. The system defined in claim 44, wherein the in-home user equipment is a set-top box and the wireless portable computing device is an electronic book configured to wirelessly receive racing results from the set-top box.

67. The system defined in claim 44, wherein the in-home user equipment is a personal computer and the wireless portable computing device is an electronic book configured to wirelessly receive racing results from the personal computer.

68. The system defined in claim 44, wherein the wireless portable computing device is a web tablet configured to wirelessly receive handicapping information from the in-home user equipment.

69. The system defined in claim 44, wherein the in-home user equipment is a set-top box and the wireless portable computing device is a web tablet configured to wirelessly receive handicapping information from the set-top box.

70. The system defined in claim 44, wherein the in-home user equipment is a personal computer and the

wireless portable computing device is a web tablet configured to wirelessly receive handicapping information from the personal computer.

71. The system defined in claim 44, wherein the wireless portable computing device is a web tablet configured to receive racing results from the in-home user equipment.

72. The system defined in claim 44, wherein the in-home equipment is a set-top box and the wireless portable computing device is a web tablet configured to wirelessly receive racing results from the set-top box.

73. The system defined in claim 44, wherein the in-home user equipment is a personal computer and the wireless portable computing device is a web tablet configured to wirelessly receive racing results from the personal computer.

74. The system defined in claim 44 further comprising a plurality of the wireless portable computing devices that are configured to allow multiple users to access the interactive wagering application.

75. The system defined in claim 44 further comprising a plurality of wireless portable devices with

which the in-home user equipment communicates wirelessly, wherein the plurality of wireless portable computing devices are configured to allow multiple users to each use a respective one of the portable computing devices to place an independent wager through the in-home user equipment.

76. The system defined in claim 44 further comprising a plurality of wireless portable computing devices, wherein the in-home user equipment is a set-top box that communicates wirelessly with the plurality of wireless portable computing devices and wherein the plurality of wireless portable computing devices are configured to allow multiple users to each place an independent wager through the set-top box.

77. The system defined in claim 44 further comprising a plurality of wireless portable computing devices, wherein the in-home user equipment is a personal computer that communicates wirelessly with the plurality of wireless portable computing devices and wherein the plurality of wireless portable computing devices are configured to allow multiple users to each place an independent wager through the personal computer.

78. The system defined in claim 44 further comprising a plurality of handheld computers with which the

in-home user equipment communicates wirelessly, wherein the plurality of handheld computers are configured to allow multiple users at the plurality of handheld computers to each place an independent wager through the in-home user equipment.

79. The system defined in claim 44 further comprising a plurality of handheld computers, wherein the in-home user equipment is a set-top box that communicates wirelessly with the plurality of handheld computers and wherein the plurality of handheld computers are configured to allow multiple users at the handheld computers to each place an independent wager through the set-top box.

80. The system defined in claim 44 further comprising a plurality of handheld computers, wherein the in-home user equipment is a personal computer that communicates wirelessly with the plurality of handheld computers and wherein the plurality of handheld computers are configured to allow multiple users to each place an independent wager through the personal computer.

81. The system defined in claim 44 further comprising a plurality of web tablets, wherein the in-home user equipment communicates wirelessly with the plurality of web tablets and wherein the plurality of web tablets are

configured to allow multiple users to each place an independent wager through the in-home user equipment.

82. The system defined in claim 44 further comprising a plurality of web tablets, wherein the in-home user equipment is a set-top box that communicates wirelessly with the plurality of web tablets and wherein the plurality of web tablets are configured to allow multiple users to each place an independent wager through the set-top box.

83. The system defined in claim 44 further comprising a plurality of web tablets, wherein the in-home user equipment is a personal computer that communicates wirelessly with the plurality of web tablets and wherein the plurality of web tablets are configured to allow multiple users to each place an independent wager through the personal computer.

84. The system defined in claim 44 further comprising a plurality of electronic books, wherein the in-home user equipment communicates wirelessly with the plurality of electronic books and wherein the electronic books are configured to allow multiple users to each place an independent wager through the in-home user equipment.

85. The system defined in claim 44 further comprising a plurality of electronic books, wherein the in-home user equipment is a set-top box that communicates wirelessly with the plurality of electronic books and wherein the plurality of electronic books are configured to allow multiple users to each place an independent wager through the set-top box.

86. The system defined in claim 44 further comprising a plurality of electronic books, wherein the in-home user equipment is a personal computer that communicates wirelessly with the plurality of electronic books and wherein the plurality of electronic books are configured to allow multiple users to each place an independent wager through the personal computer.

89. A method for wirelessly submitting electronic wagers on races that are to be run to computer equipment using an interactive wagering application that is implemented using wireless user equipment with a display, comprising:

providing a user at the wireless user equipment with on-screen options on the display of the wireless user equipment that allow the user to create a wager for a given race to be run;



allowing the user to transmit the wager from the wireless user equipment to a communications network via communications equipment at a racetrack that communicates wirelessly with the wireless user equipment when it is desired to submit the wager for processing; and

receiving the wager at the computer equipment from the communications equipment at the racetrack over the communications network for processing.

90. An interactive wagering system that provides a user with an opportunity to wirelessly submit electronic wagers on races that are to be run using an interactive wagering application, comprising:

wireless user equipment having a display, wherein the wireless user equipment is configured to provide the user with on-screen options on the display that allow the user to create a wager for a given race to be run;

computer equipment to which the wagers are submitted over a communications network; and

wireless communications equipment at a track with which the wireless user equipment wirelessly communicates, wherein the wireless user equipment and wireless communications equipment are configured to allow the user to transmit the wager from the wireless user

equipment to the communications network via the wireless communications equipment when it is desired to submit the wager for processing and wherein the computer equipment receives the wager over the communications network for processing.

91. A computer readable medium encoded with machine-readable instructions for use in submitting electronic wagers on races that are to be run to computer equipment over a communications network using an interactive wagering application that is implemented using in-home user equipment and at least one wireless portable computing device with a display that is in two-way wireless communications with the in-home user equipment, the machine-readable instructions comprising:

providing a user at the wireless portable computing device with on-screen options on the display of the wireless portable computing device that allow the user to create a wager for a given race to be run, wherein the on-screen options are based at least in part on information received over a wireless communications path between the wireless portable computing device and the in-home user equipment, and wherein the information is based at least in part on racing data received by the in-home user equipment from the communications network; and

allowing the user to wirelessly transmit the wager from the wireless portable computing device to the in-home user equipment over the wireless communications path when it is desired to submit the wager for processing; and

transmitting the wager from the in-home user equipment to the computer equipment over the communications network for processing.

92. The computer readable medium defined in claim 91 wherein the race is a horse race, the method further comprising allowing the user to use the wireless portable computing device to select a horse for the wager.

93. The computer readable medium defined in claim 91 further comprising providing the user with an opportunity to use the wireless portable computing device to select a racetrack for the wager.

94. The computer readable medium defined in claim 91 further comprising providing the user with an opportunity to use the wireless portable computing device to select a race for the wager.

95. The computer readable medium defined in claim 91 further comprising providing the user with an

opportunity to use the wireless portable computing device to select a wager type for the wager.

96. The computer readable medium defined in claim 91 further comprising providing the user with an opportunity to use the wireless portable computing device to select a wager amount for the wager.

97. The computer readable medium defined in claim 91, wherein the computer equipment is part of a transaction processing and subscription management system, the method further comprising processing the wager with the transaction processing and subscription management system once the wager has been placed.

98. The computer readable medium defined in claim 91, wherein the race is a horse race and wherein an account is maintained for the user at a transaction processing and subscription management system, the method further comprising processing the wager once the wager has been placed and crediting the account when the wager is successful.

99. The computer readable medium defined in claim 91, wherein the in-home user equipment includes user television equipment.

100. The computer readable medium defined in claim 91, wherein the in-home user equipment includes a set-top box and wherein transmitting the wager from the in-home user equipment to the computer equipment over the communications network for processing comprises transmitting the wager from the set-top box to the computer equipment over the communications network for processing.

101. The computer readable medium defined in claim 91, wherein the in-home user equipment includes user computer equipment.

102. The computer readable medium defined in claim 91, wherein the in-home user equipment includes a personal computer and wherein transmitting the wager from the in-home user equipment to the computer equipment over the communications network for processing comprises transmitting the wager from the personal computer to the computer equipment over the communications network for processing.

103. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a handheld computer, the method further comprising using the handheld computer to wirelessly receive handicapping information from the in-home user equipment.

104. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a handheld computer and the in-home user equipment is a set-top box, the method further comprising using the handheld computer to wirelessly receive handicapping information from the set-top box.

105. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a handheld computer and the in-home computing device is a personal computer, the method further comprising using the handheld computer to wirelessly receive handicapping information from the personal computer.

106. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a handheld computer, the method further comprising using the handheld computer to wirelessly receive race results from the in-home user equipment.

107. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a handheld computer and the in-home user equipment is a set-top box, the method further comprising using the handheld computer to wirelessly receive race results from the set-top box.

108. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a handheld computer and the in-home computing device is a personal computer, the method further comprising using the handheld computer to wirelessly receive race results from the personal computer.

109. The computer readable medium defined in claim 91, wherein the wireless portable computing device is an electronic book, the method further comprising using the electronic book to wirelessly receive handicapping information from the in-home user equipment.

110. The computer readable medium defined in claim 91, wherein the wireless portable computing device is an electronic book and the in-home user equipment is a set-top box, the method further comprising using the electronic book to wirelessly receive handicapping information from the set-top box.

111. The computer readable medium defined in claim 91, wherein the wireless portable computing device is an electronic book and the in-home computing device is a personal computer, the method further comprising using the electronic book to wirelessly receive handicapping information from the personal computer.

112. The computer readable medium defined in claim 91, wherein the wireless portable computing device is an electronic book, the method further comprising using the electronic book to wirelessly receive racing results from the in-home user equipment.

113. The computer readable medium defined in claim 91, wherein the wireless portable computing device is an electronic book and the in-home user equipment is a set-top box, the method further comprising using the electronic book to wirelessly receive racing results from the set-top box.

114. The computer readable medium defined in claim 91, wherein the wireless portable computing device is an electronic book and the in-home computing device is a personal computer, the method further comprising using the electronic book to wirelessly receive racing results from the personal computer.

115. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a web tablet, the method further comprising using the web tablet to wirelessly receive handicapping information from the in-home user equipment.



116. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a web tablet and the in-home user equipment is a set-top box, the method further comprising using the web tablet to wirelessly receive handicapping information from the set-top box.

117. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a web tablet and the in-home computing device is a personal computer, the method further comprising using the web tablet to wirelessly receive handicapping information from the personal computer.

118. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a web tablet, the method further comprising using the web tablet to wirelessly receive racing results from the in-home user equipment.

119. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a web tablet and the in-home user equipment is a set-top box, the method further comprising using the web tablet to wirelessly receive racing results from the set-top box.

120. The computer readable medium defined in claim 91, wherein the wireless portable computing device is a web tablet and the in-home computing device is a personal computer, the method further comprising using the web tablet to wirelessly receive racing results from the personal computer.

121. The computer readable medium defined in claim 91 further comprising allowing multiple users to access the interactive wagering application using a plurality of the wireless portable computing devices.

122. The computer readable medium defined in claim 91, wherein the in-home user equipment communicates wirelessly with a plurality of wireless portable computing devices, the method comprising allowing multiple users at the plurality of wireless portable computing devices to each use a respective one of the plurality of wireless portable computing devices to place an independent wager through the in-home user equipment.

123. The computer readable medium defined in claim 91, wherein the in-home user equipment is a set-top box that communicates wirelessly with a plurality of wireless portable computing devices, the method comprising allowing multiple users at the plurality of wireless

portable computing devices to each place an independent wager through the set-top box.

124. The computer readable medium defined in claim 91, wherein the in-home user equipment is a personal computer that communicates wirelessly with a plurality of wireless portable computing devices, the method comprising allowing multiple users at the plurality of wireless portable computing devices to each place an independent wager through the personal computer.

125. The computer readable medium defined in claim 91, wherein the in-home user equipment communicates wirelessly with a plurality of handheld computers, the method comprising allowing multiple users at the plurality of handheld computers to each place an independent wager through the in-home user equipment.

126. The computer readable medium defined in claim 91, wherein the in-home user equipment is a set-top box that communicates wirelessly with a plurality of handheld computers, the method comprising allowing multiple users at the handheld computers to each place an independent wager through the set-top box.

127. The computer readable medium defined in claim 91, wherein the in-home user equipment is a personal computer that communicates wirelessly with a plurality of handheld computers, the method comprising allowing multiple users at the plurality of handheld computers to each place an independent wager through the personal computer.

128. The computer readable medium defined in claim 91, wherein the in-home user equipment communicates wirelessly with a plurality of web tablets, the method comprising allowing multiple users at the plurality of web tablets to each place an independent wager through the in-home user equipment.

129. The computer readable medium defined in claim 91, wherein the in-home user equipment is a set-top box that communicates wirelessly with a plurality of web tablets, the method comprising allowing multiple users at the plurality of web tablets to each place an independent wager through the set-top box.

130. The computer readable medium defined in claim 91, wherein the in-home user equipment is a personal computer that communicates wirelessly with a plurality of web tablets, the method comprising allowing multiple users

at the plurality of web tablets to each place an independent wager through the personal computer.

131. The computer readable medium defined in claim 91, wherein the in-home user equipment communicates wirelessly with a plurality of electronic books, the method comprising allowing multiple users at the plurality of electronic books to each place an independent wager through the in-home user equipment.

132. The computer readable medium defined in claim 91, wherein the in-home user equipment is a set-top box that communicates wirelessly with a plurality of electronic books, the method comprising allowing multiple users at the plurality of electronic books to each place an independent wager through the set-top box.

133. The computer readable medium defined in claim 91, wherein the in-home user equipment is a personal computer that communicates wirelessly with a plurality of electronic books, the method comprising allowing multiple users at the plurality of electronic books to each place an independent wager through the personal computer.

135. A computer readable medium encoded with machine-readable instructions for wirelessly submitting

electronic wagers on races that are to be run to computer equipment using an interactive wagering application that is implemented using wireless user equipment with a display, the machine-readable instructions comprising:

providing a user at the wireless user equipment with on-screen options on the display of the wireless user equipment that allow the user to create a wager for a given race to be run;

allowing the user to transmit the wager from the wireless user equipment to a communications network via communications equipment at a racetrack that communicates wirelessly with the wireless user equipment when it is desired to submit the wager for processing; and

receiving the wager at the computer equipment from the communications equipment at the racetrack over the communications network for processing.

136. The computer readable medium defined in claim 135, wherein the computer equipment is located at a transaction processing and subscription management system.

137. The computer readable medium defined in claim 135, wherein the computer equipment is part of a local network at the racetrack.

138. The method defined in claim 89, wherein the computer equipment is located at a transaction processing and subscription management system.

139. The method defined in claim 89, wherein the computer equipment is part of a local network at the racetrack.

140. The system defined in claim 90, wherein the computer equipment is located at a transaction processing and subscription management system.

141. The system defined in claim 90, wherein the computer equipment is part of a local network at the racetrack.

142. A method for submitting electronic wagers on races that are to be run to computer equipment over a communications network using an interactive wagering application that is implemented using a television set-top box and at least one wireless user device with a display that is in wireless communication with the television set-top box, comprising:

providing a user at the wireless user device with on-screen options on the display of the wireless user device that allow the user to create a wager for a given

race to be run, wherein the on-screen options are based at least in part on information transmitted wirelessly from the television set-top box to the wireless user device, and wherein the information is based at least in part on racing data received by the television set-top box from the communications network;

allowing the user to wirelessly transmit the wager from the wireless user device to the television set-top box when it is desired to submit the wager for processing; and

transmitting the wager from the television set-top box to the computer equipment over the communications network for processing.

143. An interactive wagering system that provides a user with an opportunity to submit electronic wagers on races that are to be run to computer equipment over a communications network using an interactive wagering application, comprising:

a television set-top box; and

at least one wireless user device with a display that is in wireless communication with the television set-top box, wherein the television set-top box and the wireless user device are configured to:



provide the user with on-screen options on the display of the wireless user device that allow the user to create a wager for a given race to be run, wherein the on-screen options are based at least in part on information transmitted wirelessly from the television set-top box to the wireless user device, and wherein the information is based at least in part on racing data received by the television set-top box from the communications network;

allow the user to wirelessly transmit the wager from the wireless user device to the television set-top box when it is desired to submit the wager for processing; and

transmit the wager from the television set-top box to the computer equipment over the communications network for processing.

144. A computer readable medium encoded with machine-readable instructions for use in submitting electronic wagers on races that are to be run to computer equipment over a communications network using an interactive wagering application that is implemented using a television set-top box and at least one wireless user device with a display that is in two-way wireless

communication with the television set-top box, the machine-readable instructions comprising:

providing a user at the wireless user device with on-screen options on the display of the wireless user device that allow the user to create a wager for a given race to be run, wherein the on-screen options are based at least in part on information transmitted wirelessly from the television set-top box to the wireless user device, and wherein the information is based at least in part on racing data received by the television set-top box from the communications network;

allowing the user to wirelessly transmit the wager from the wireless user device to the television set-top box when it is desired to submit the wager for processing; and

transmitting the wager from the television set-top box to the computer equipment over the communications network for processing.



EVIDENCE APPENDIX B  
COPY OF THE FINAL OFFICE ACTION DATED JULY 8, 2004



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|--|-------------|----------------------|---------------------|------------------|
| 09/630,604   | 08/01/2000  | MASOOD GARAH         | ODS-23              | 8445             |
| 1473   | 7590        | 07/08/2004           | EXAMINER            |                  |
| FISH & NEAVE<br>1251 AVENUE OF THE AMERICAS<br>50TH FLOOR<br>NEW YORK, NY 10020-1105 |             |                      | ENATSKY, AARON L    |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 3713                |                  |

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Please find below and/or attached an Office communication concerning this application or proceeding.



# Office Action Summary

Application No.

09/630,604

Applicant(s)

GARAH ET AL.

Examiner

Aaron L Enatsky

Art Unit

3713

~ The MAILING DATE of this communication appears on the cover sheet with the correspondence address ~

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-86,89-133 and 135-144 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-86,89-133 and 135-144 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5/1404.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other:



Application/Control Number: 09/630,604  
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## DETAILED ACTION

### *Response to Amendment*

Examiner acknowledges receipt of Applicant's amendment on 05/14/04. Claims 1-86, 89-133, and 135-144 remain pending.

### *Drawings*

Examiner acknowledges receipt and acceptance of drawings.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-86, 91-133 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,004,211 to Brenner et al in view of Lappington et al. '413 (Lapp). In regard to claims 1 and 44, Brenner et al. teaches of an interactive off-track wagering (2:35-36) that is run over a computer based system to racing fans in their homes (5:61-64). Wagering is accomplished though network communication from a user terminal to a totalisator (7:35-43), and is communicated wirelessly from the user to the user terminal through any suitable user interface (7:21-34). While Brenner et al. does not specifically teach that the wireless remote control device has a screen with on-screen options, but he does teach that any suitable wireless user interface

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device can be used in conjunction with television sets for display (7:21-34). Lapp teaches of an interactive TV set-top system using a wireless remote handheld that is capable of displaying events for the purpose of switching between multiple interactive concurrent programs (Abstract).

It is well known in that art that audio/video remote controllers are wireless multifunctional devices with user interface screens producing user selectable menus. Examples of such are devices specifically made as all-in-one audio/video remotes, or personal digital assistants programmed with an extra function of control audio/video systems. With the remotes such as a personal digital assistant (PDA) it also would have been obvious to one skilled in the art at the time to display informational/wager choices on the PDA to allow the race to be displayed on a separate display continuously. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Brenner et al. to use the wireless handheld taught by Lapp for the purposes as taught above in addition to reasons taught by Lapp such as view multiple concurrent events without losing scores. This would also allow one to place multiple concurrent bets on different races, releasing the constraints of betting only on a single game at any one time.

In regards to claims 2-6 and 45-49, Brenner et al. teaches that the race is a horse race (6:3) where a user can select a horse for a wager, a racetrack, a race, a wager type, and a wager amount (2:45-51).

In regards to claims 7-8 and 50-51, Brenner et al. teaches that totalisator is a computer system capable of handling user transactions, user accounts, crediting accounts when the wager is successful, and standard computer network communications (7:35-54).

In regards to claims 9 and 52, Brenner et al. teaches that the in-home equipment includes conventional television sets (7:26).

In regards to claims 10 and 53, Brenner et al. teaches the transmission of racing data via cable, satellite, or other mediums (6:55-61) and wagers transmitted over a network to computer equipment (7:35-54) where both types of information are received and sent to a user terminal. Brenner et al. does not teach that the user terminal is a set-top box, however it is obvious to one skilled in the art that end user terminals for processing cable or satellite data for display on a television set can be set-top boxes.

In regards to claims 11-12 and 54-55, Brenner et al. teaches that the user terminal comprises personal computer equipment (7:55-67), and the computer equipment transmits the wager information to other computer equipment for processing (7:35-54).

In regards to claims 13-30 and 56-73, Brenner et al. teaches handicapping information and race results received by a user terminal (10:9-23). It was established earlier that wireless remote taught by Brenner et al. could comprise of a number of known remote control elements well known in the art such as a PDA therefore it would have been obvious to display handicap information and race results on the wireless remote device sent from the user terminal. In regard to the various claimed wireless remote devices, the handheld computer, electronic book, and web tablet it is well known in that art that these devices are function equivalents and it would have been obvious to one skilled in the art to substitute these devices for one another. It was also established earlier that the user terminal is a computer device (7:21-34) situated in a user's home (5:59-67) that is capable of network communications (7:35-54). It is well known in the art that a computer can function both as a set-top box as well as functions of personal computer making



the devices functional equivalents. It would have been obvious to one skilled in the art at the time the invention was made to use various equivalent wireless remote devices in communication with a computer device as a user terminal for the purpose of receiving and displaying handicap and race results information to a user where the personal computer communication combinations would be better suited to a more technical/computer savvy demographic while the set-top box combinations to a less technical demographic.

In regards to claims 31-43 and 74-86, Brenner et al. teaches that each user can place a wager (7:35-41) from in home equipment (5:35-64) where the wagering system comprises of a large array of user terminals (7:10-11). This would suggest that users are placing wagers that are independent of one another and establishing individuality to the wagering system through the use of a personal identification code (8:41-50). Brenner et al. does not teach the use of a plurality of wireless devices communicating with the user terminal. However, it has long been considered to be within ordinary skill in the art to duplicate elements and their corresponding functions, especially in network communication where multiplicity of like devices is the norm, therefore, obvious to one skilled in the art at the time the invention was made to have a plurality of handheld devices place independent wagers with a user terminal. In regards to the choice of communication equipment, as established above, it would have been obvious to one skilled in the art to interchange functional equivalents of the handheld devices and the set-top or personal computer in their respective communication hierarchy.

In re claims 91-133, Brenner et al. in view of Lapp teach the claimed limitations as discussed above. In addition, as is well known in the art, communication exists with computer systems interpreting machine-readable instructions.

In re claims 142-144, Brenner et al. in view of Lapp teaches the claims limitations as discussed above, but does not disclose a set-top box as the sole communication interface between a handheld device and wagering servers. However, as is well known in the art, set-top devices can function both to transmit and receive information to/from remote servers. Lappington also teaches that a user can contact operations by using a wireless or wired medium (9:25-27) similar to how data is initially received. In view of Lappington's teaching of commensurate transmit and receive communication mediums, it would not be beyond one of ordinary skill to modify Brenner in view of Lappington so that a single integrated device serves both purposes to reduce system complexity and costs.

Claims 89-90, and 134-141 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,004,211 to Brenner et al. in view of U.S. Patent No. 5,999,808 to LaDue. Brenner et al. teaches the above mentioned horse race wagering system, but does not disclose the use of a wireless application protocol for communication with a computer system. LaDue teaches the use of a wireless application protocol for use in wireless gaming and wagering (Abstract) for the purpose of operating seamlessly with existing wireless networks without need for further modification (2:26-29). LaDue also teaches the use of a handheld computer for communication with the wagering/gaming system with a built in screen capable of displaying users selectable menus (Fig 9). It would have been obvious to one skilled in the art at the time the invention was made to combine the wireless application protocol system for wagering by LaDue with the horse race wagering system as taught by Brenner et al. for the purpose of seamless operation with the existing wireless network infrastructure and so that wagering can take place anywhere legal including the race track or in a user's home.

In re claims 134-136, 138, and 140, Brenner et al. in view of LaDue teach a computer network system for wagering as discussed above. In addition, as is well known in the art, communication exists with computer systems interpreting machine-readable instructions.

In re claims 137, 139, and 141, Brenner et al. in view of LaDue teach a computer network system for wagering as discussed above. While not specifically disclosing computer equipment as part of a local area network, Brenner et al. shows in Fig. 1 shows the wager processing equipment interconnected. Whether the equipment is connected in a local area or a wide area network, lacking criticality, would not serve to distinguish over prior art. The method of interconnection between equipment would not affect system functionality and could be made equivalent assuming adequate bandwidth.

#### *Response to Arguments*

Applicant's arguments have been fully considered, but are not considered persuasive. Applicant has essentially reiterated prior arguments submitted 09/19/03. This reiteration indicates that Applicant believes that Examiner has not yet responded to prior arguments. Applicant also made this issue clear in an interview, on 03/15/04. Applicant's main contention with Examiner's rejection is that it does not provide motivation to combine Brenner in view of Lappington, which then cascades down to any other rejections dependent on this combination. Applicant's arguments are broken down into specific sections, however, the arguments revolve around the belief that Examiner's motivation is not *sufficient* to combine Brenner in view of Lappington. Examiner's prior treatment of the individual arguments is believed to suffice for the Applicant's reiteration.

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For additional consideration, Examiner believes that the rejection provides clear motivation that is taught by Lappington. Applicant attacks the motivation by arguing that Examiner's motivation lack sufficiency, not that the combination is somehow deficient or teaches away from the either reference. The arguments of record are more akin to Applicant disagreeing with the motivation, or that Applicant has a different motivation, which somehow causes Examiner's provided motivation to be invalid. Examiner's burden is to show that which is known to one of ordinary skill in the art at the time of the invention, not motivation that Applicant has to necessarily agree with. Examiner believes that requirements for a 103 rejection has been satisfied, which is to show what one of ordinary skill in the art at the time the invention was made would have known, thus is unconvinced by Applicant's arguments.

*Citation of Pertinent Prior Art*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 4,799,683 to Bruner, Jr. teaches a remote control system that interacts with a television game. The remote control system provides a screen to a player to play and wager in a game.

*Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron L Enatsky whose telephone number is 703-305-3525. The examiner can normally be reached on 8-6 M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on 703-308-1745. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

Aaron Enatsky  
7/6/04

  
JOHN M. HOTELLING, II  
PRIMARY EXAMINER



EVIDENCE APPENDIX C

COPY OF BRENNER ET AL. U.S. PATENT NO. 6,004,211



US006004211A

**United States Patent** [19]**Brenner et al.**[11] **Patent Number:** **6,004,211**[45] **Date of Patent:** **Dec. 21, 1999**[54] **INTERACTIVE WAGERING SYSTEMS AND PROCESSES**

[75] Inventors: **Mark A. Brenner**, Tulsa; **Everett L. Devore**, Broken Arrow; **Ronald E. Dewell**, Tulsa; **Andrew T. Lucas**, Broken Arrow; **Richard E. McNutt**, Glenpool; **Mitch L. Neilsen**, Stillwater; **Brent E. Perry**, Tulsa; **W. Scott Reneau**, Tulsa; **Kannan Srikanth**, Tulsa; **Jon C. Zaring**, Tulsa, all of Okla.

[73] Assignee: **O.D.S. Technologies, L.P.**, Broomfield, Colo.

[21] Appl. No.: **09/138,953**

[22] Filed: **Aug. 24, 1998**

**Related U.S. Application Data**

[63] Continuation of application No. 08/526,007, Sep. 8, 1995, Pat. No. 5,830,068.

[51] Int. Cl.<sup>6</sup> ..... **A63F 9/22**

[52] U.S. Cl. .... **463/40; 463/25; 700/93**

[58] Field of Search ..... **463/42, 41, 40, 463/28, 25, 16, 6, 1; 364/412.1, 411.1, 410.1; 700/91, 92, 93**

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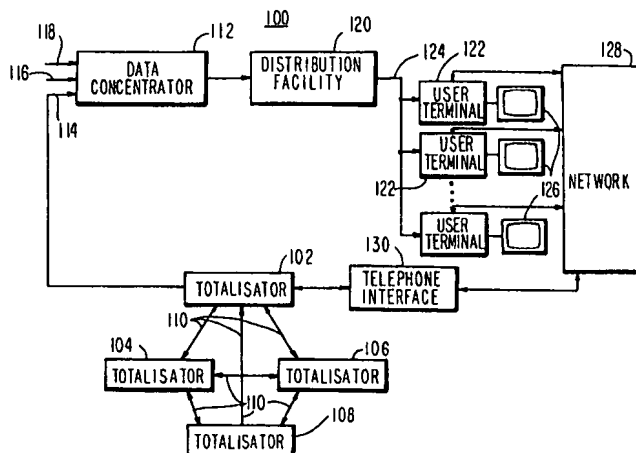
*Primary Examiner*—Michael O'Neill

*Attorney, Agent, or Firm*—Fish & Neave; G. Victor Treyz

[57]

**ABSTRACT**

Systems and processes for interactive off-track wagering are provided. A user reviews racing information and places bets using an off-track terminal. The user interactively selects a desired racetrack and race. Odds, pools, and payoff amounts may be viewed for a variety of complex wager types. To place a wager, the user selects a wager type, wager amount, and the desired runners. Account information can be reviewed. If desired, the user can transfer funds from a bank account to in account used for wagering. Racing videos can be viewed while the user reviews odds and places bets. Video clips of past races can be ordered. Related advertisements can be presented using text or video clips. Merchandise may be ordered interactively. Information regarding system usage may be gathered.

**59 Claims, 50 Drawing Sheets**

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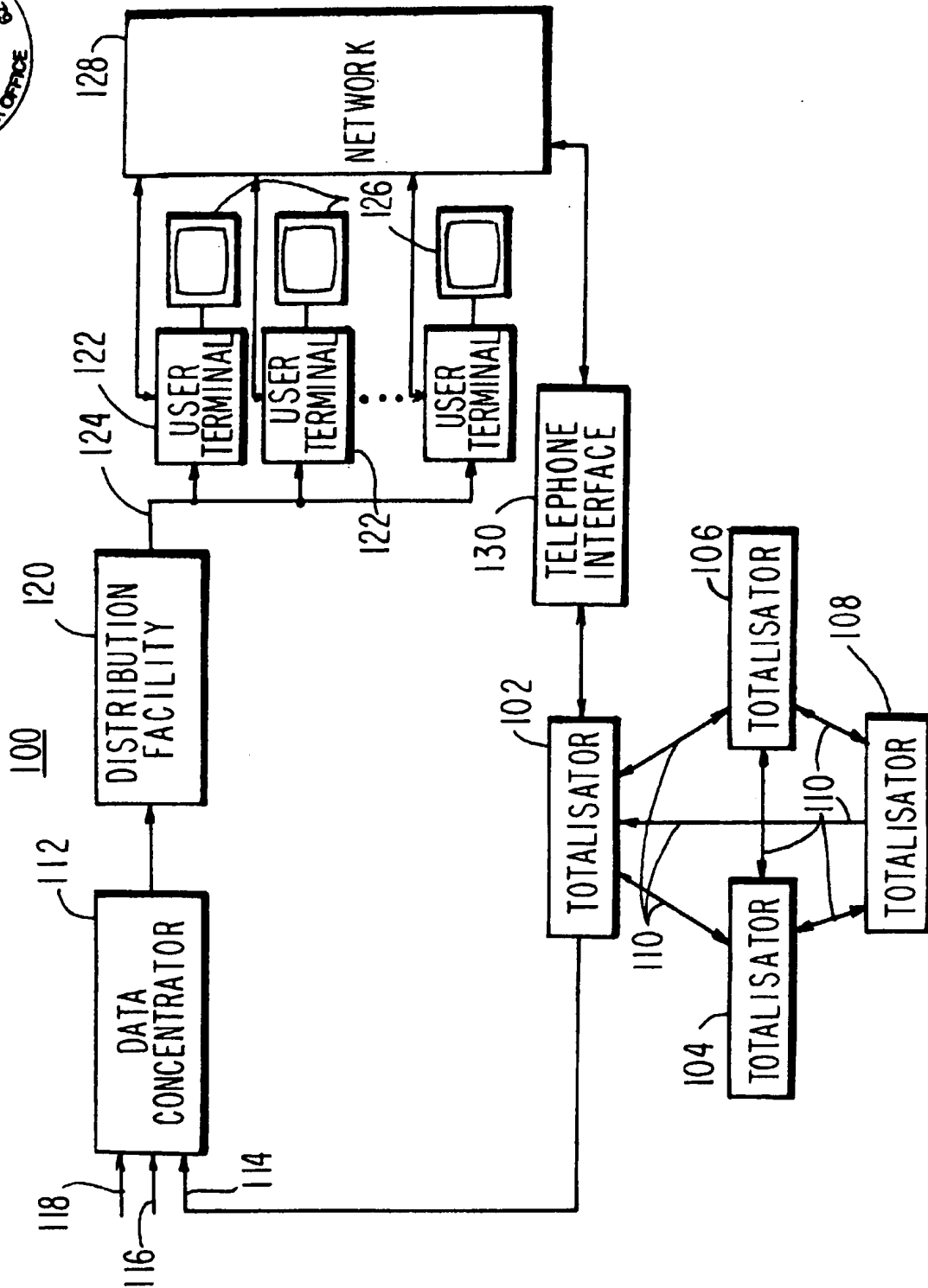


FIG. 1

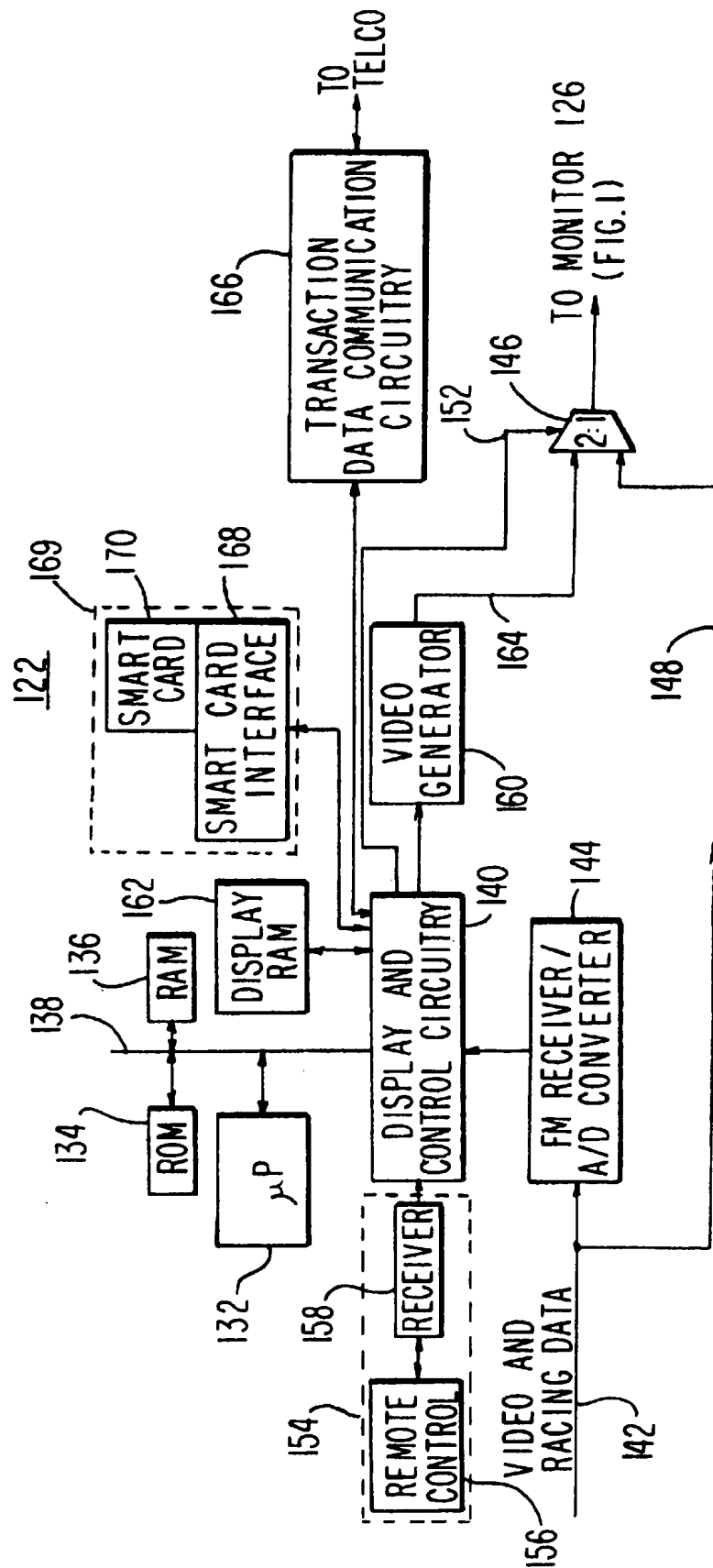


FIG. 2

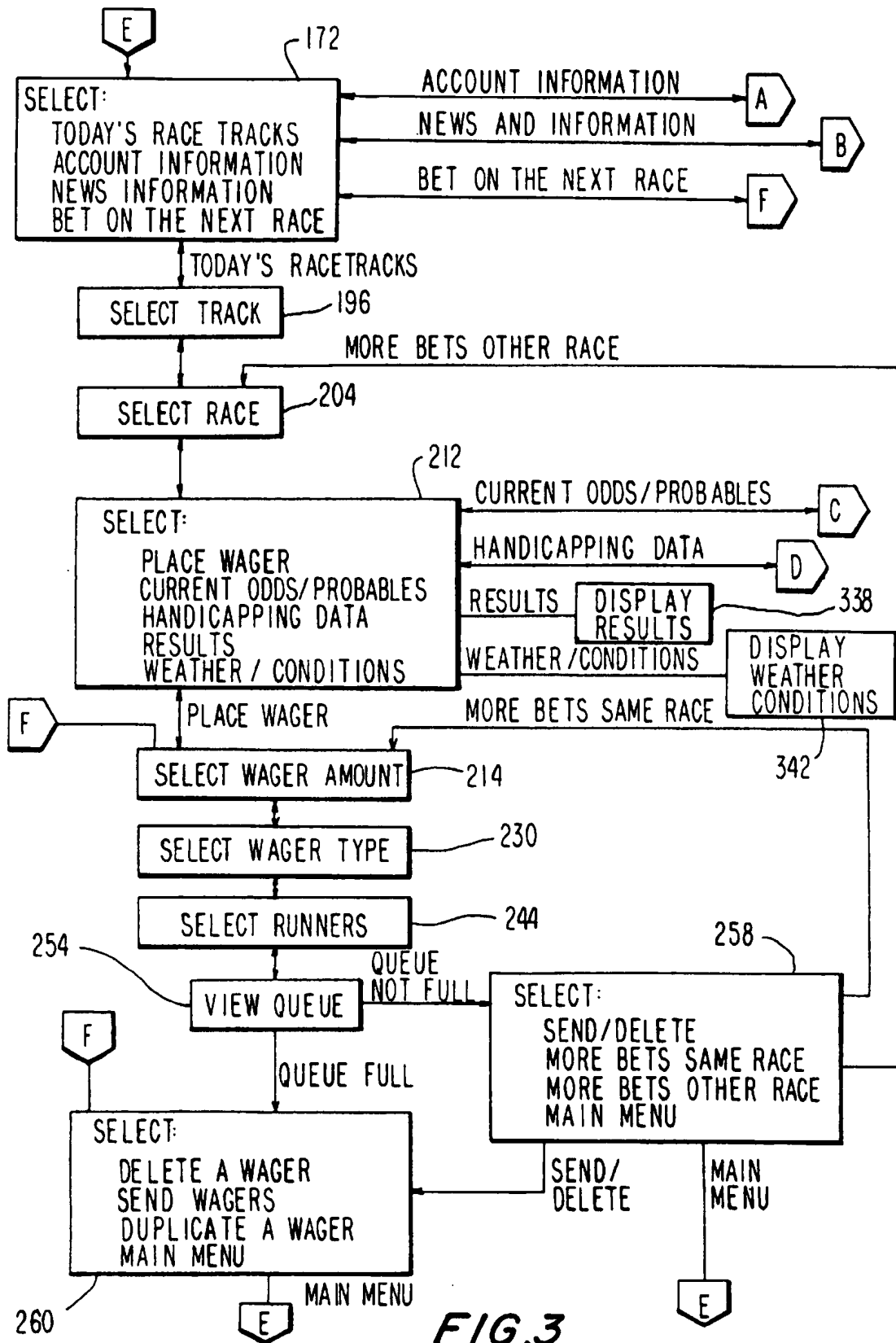


FIG. 3

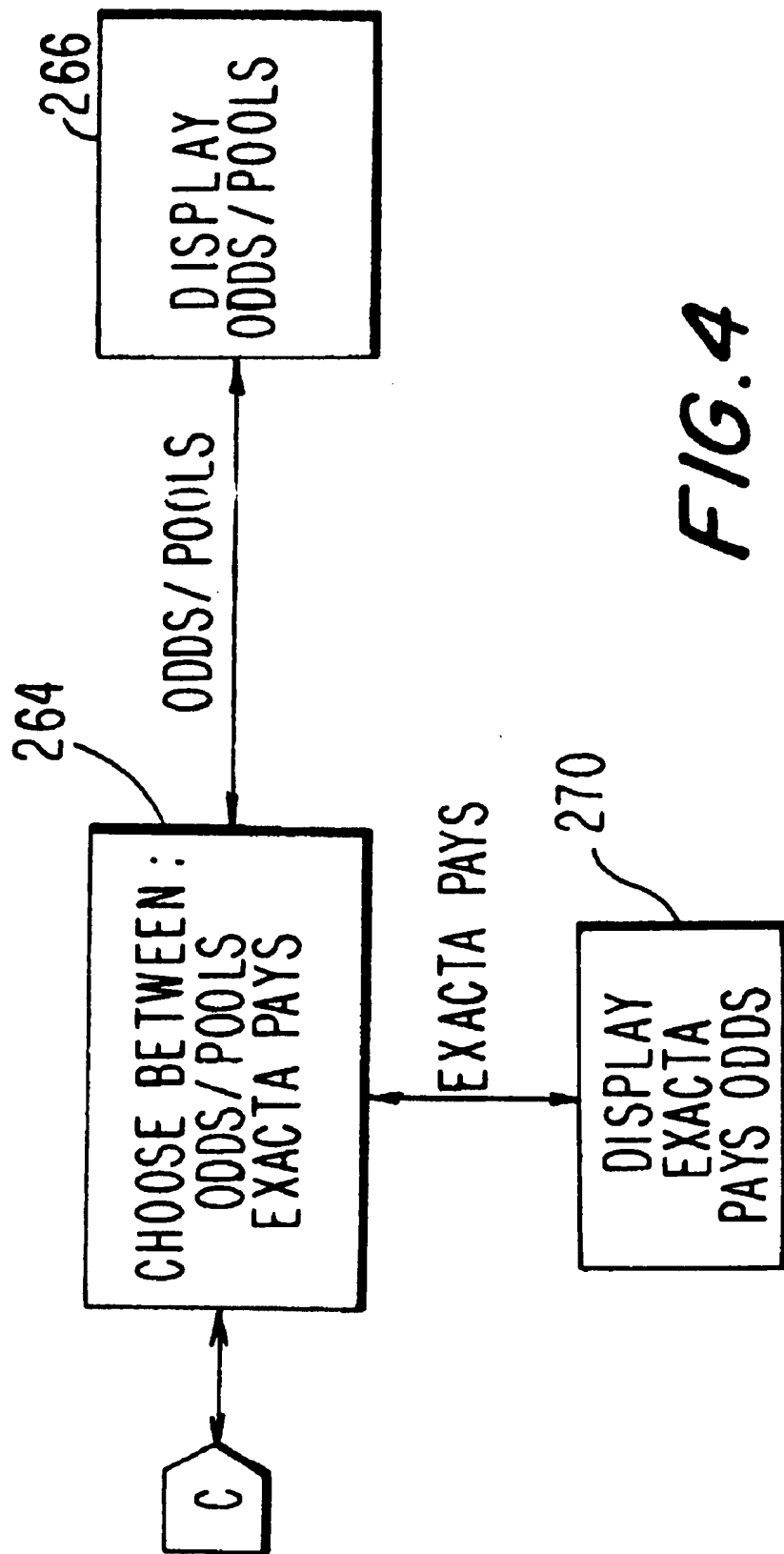
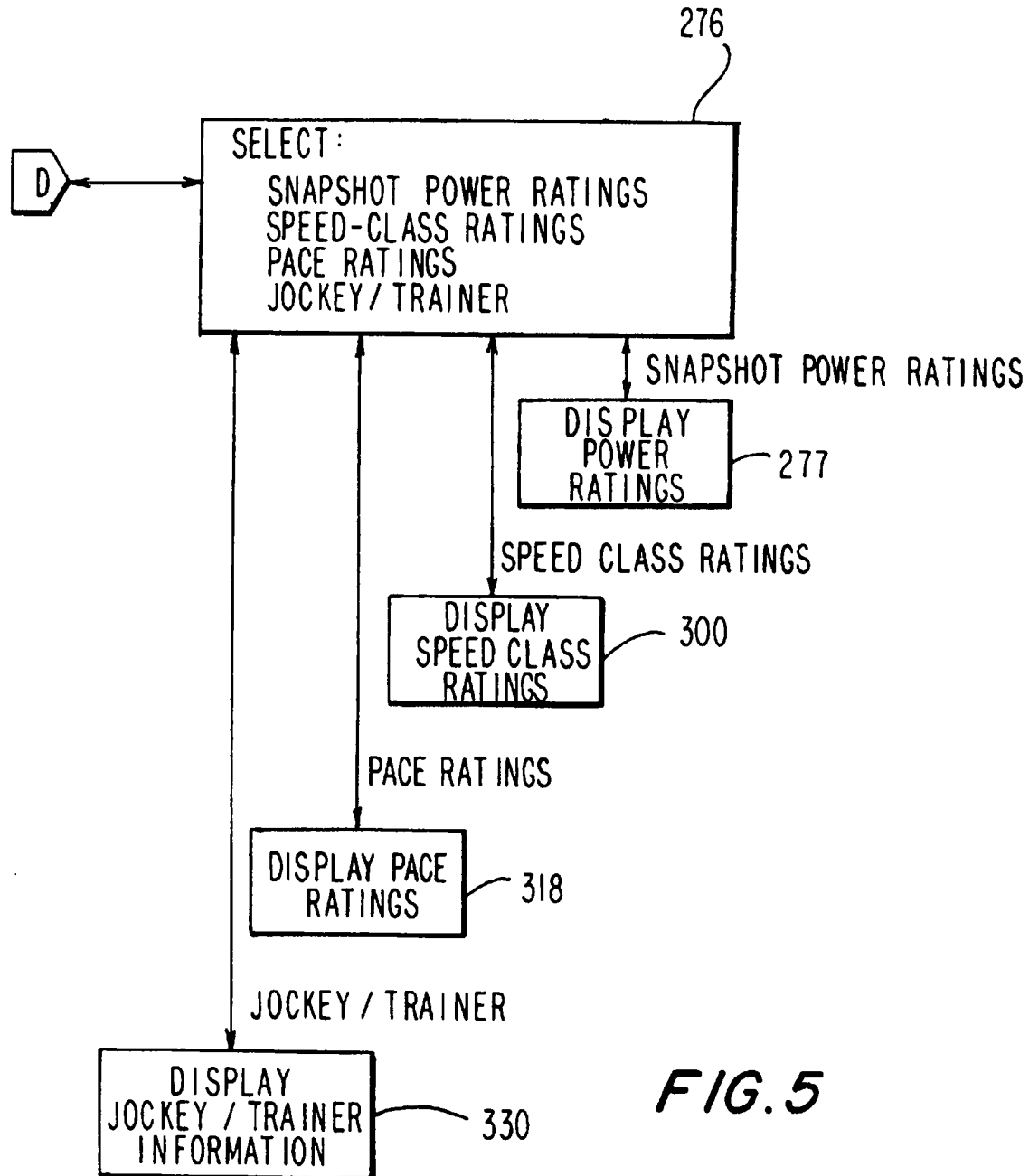


FIG. 4

**FIG. 5**

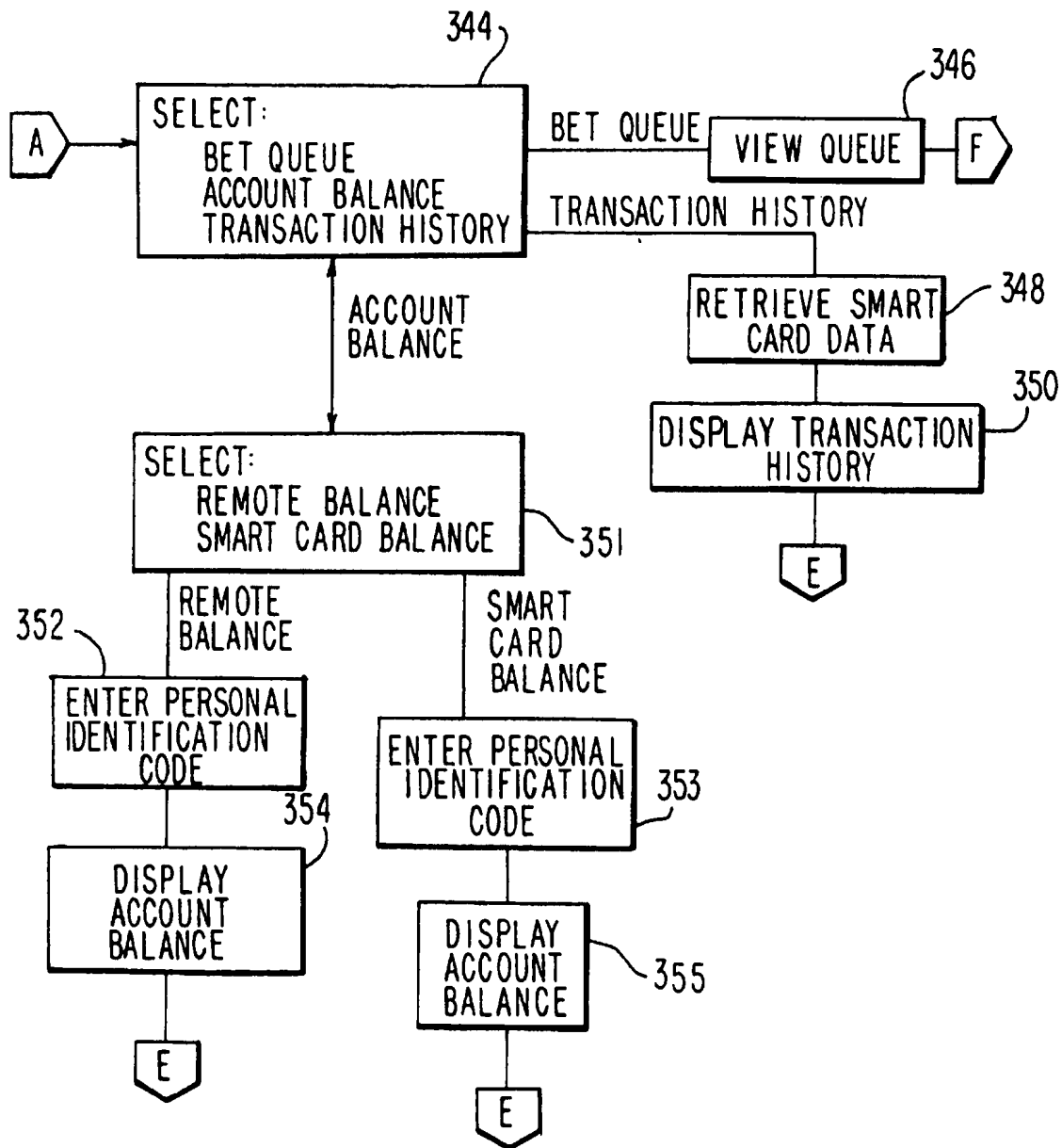
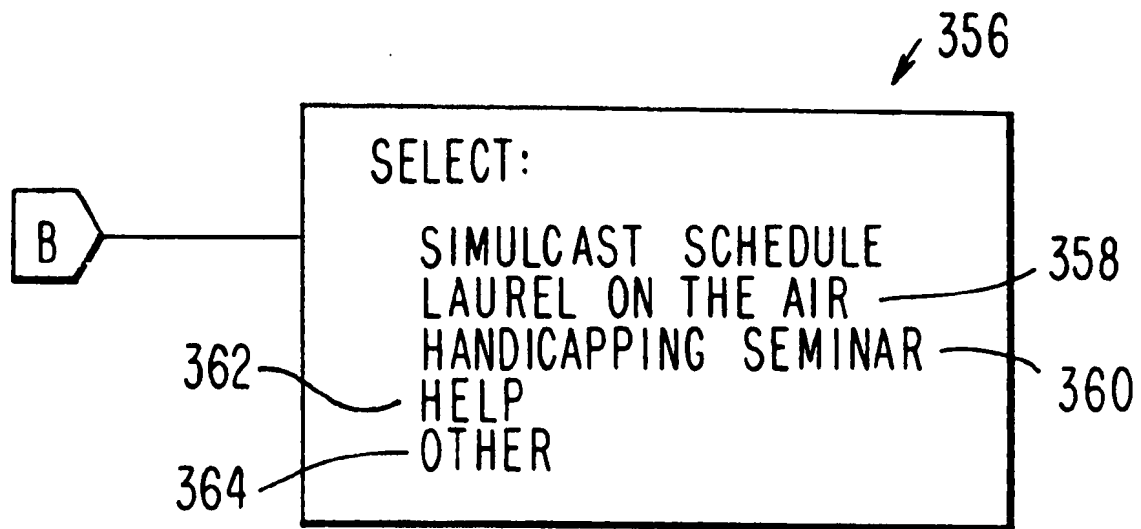


FIG. 6

**FIG. 7**

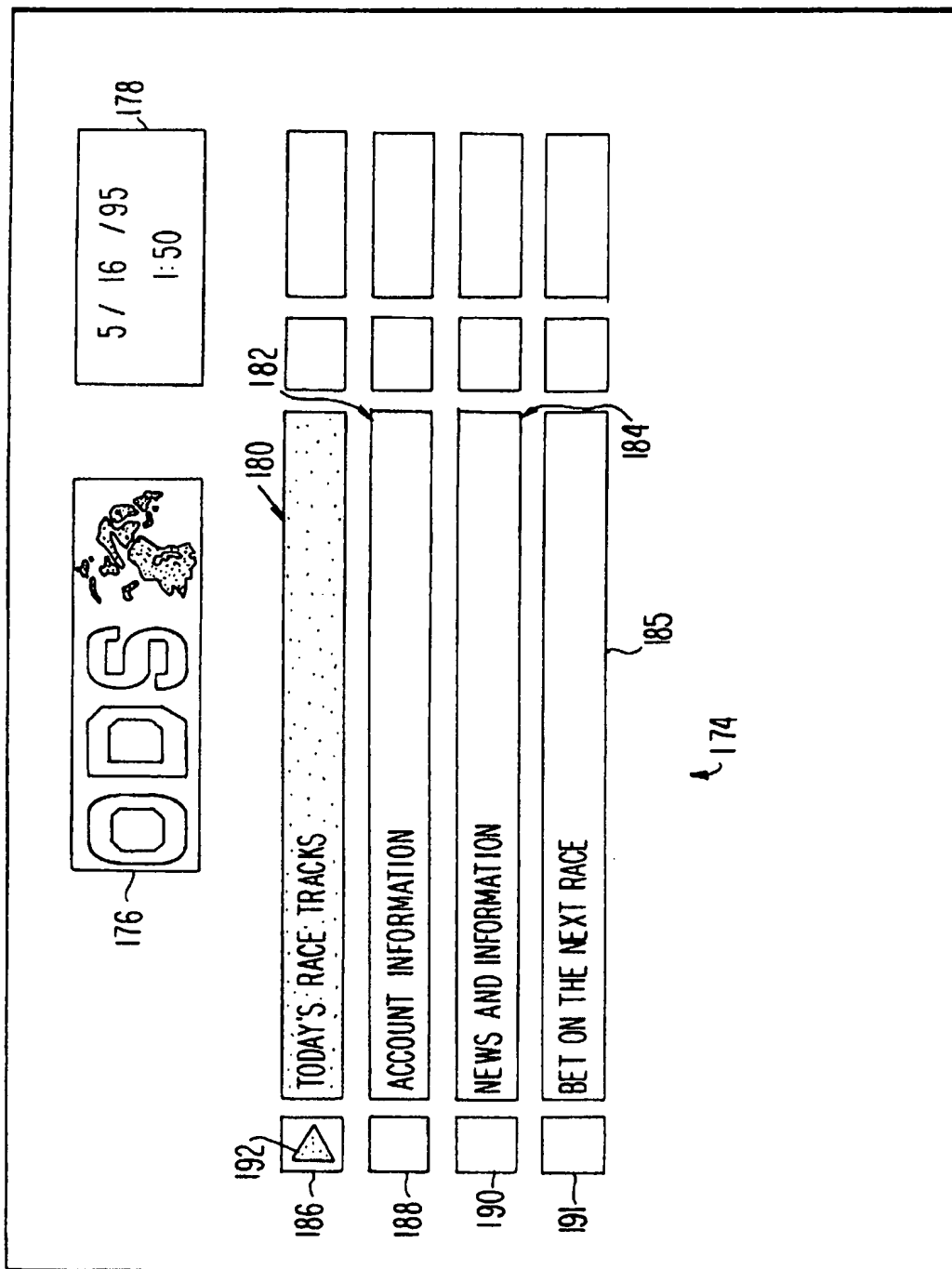


FIG. 8

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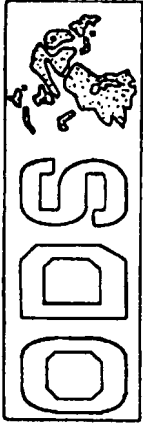

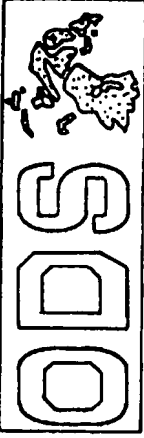
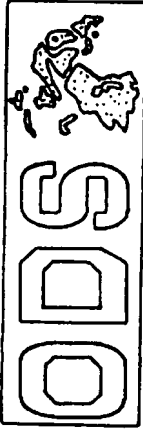


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|  | <div>PHILADELPHIA PARK</div> | <div>3</div>   | <div>1:41</div>   |
|  |  | <div>200</div>   |   |
|  |  | <div>202</div>   |   |

FIG. 9

|                                     |           |  |   |                     |       |
|-------------------------------------|-----------|--|---|---------------------|-------|
| PIM                                 |           |  |   | 5 / 16 / 95<br>1:50 |       |
| <input type="checkbox"/>            | RACE 1    |  | F | POST                | 12:00 |
| <input type="checkbox"/>            | RACE 2    |  | F |                     | 1:26  |
| <input checked="" type="checkbox"/> | RACE 3    |  |   |                     | 1:56  |
| <input type="checkbox"/>            | RACE 4    |  |   |                     | 1:30  |
| <input type="checkbox"/>            | RACE 5    |  |   |                     | 2:00  |
| <input type="checkbox"/>            | RACE 6    |  |   |                     | 2:30  |
| <input checked="" type="checkbox"/> | CONTINUED |  |   |                     | 10F 2 |

192

FIG. 10

|                                     |  |  |                          |              |
|-------------------------------------|--|--|--------------------------|--------------|
| PIM                                 |  |  | 5 / 16 / 95<br>1:50      |              |
| <input checked="" type="checkbox"/> | RACE 7   |  | <input type="checkbox"/> | POST<br>3:00 |
| <input type="checkbox"/>            | RACE 8   |  | <input type="checkbox"/> | 3:00         |
| <input checked="" type="checkbox"/> | CONTINUED  |  | <input type="checkbox"/> | 2 OF 2       |

208

FIG. 11

FIG. 12

218

ODDS

1 20  
2 8  
3 9 - 2  
4 7 - 2  
5 8  
6 3  
7 6  
8 10  
9 8

\$ SELECT AMOUNT \$

1 2 3  
4 5 10 15  
20 25 50 75  
100 150

224

225

7:56  
19 MIN.  
TO POST.

226

GO BACK DONE

228

PIM - 3

FIG. 13

PIM - 3

1:50  
19 MIN  
TO POST

236  
\$5

SELECT BET TYPE

WIN WS PLC WPS SHW EXA WP BOX

GO BACK DONE

ODDS

1 2 3 4 5 6 7 8 9 20 8 9-2 7-2 8 3 6 10 8

FIG. 14

PIM - 3

1:50  
19 MIN.  
TO POST

\$5 EXA 240

SELECT BET TYPE

WIN WS PLC WPS SHW WP EXA 238

BOX 242

GO BACK 243

ODDS

1 2 3 4 5 6 7 8 9 20 8 9-2 7-2 8 3 6 10 8

FIG. 15

**ODDS**

|   |       |
|---|-------|
| 1 | 20    |
| 2 | 8     |
| 3 | 9 - 2 |
| 4 | 7 - 2 |
| 5 | 8     |
| 6 | 3     |
| 7 | 6     |
| 8 | 10    |
| 9 | 8     |

**SELECT HORSE**

|   |   |   |   |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 |   |   |   |

ALL

**PIM - 3**

1:50  
19 MIN.  
TO POST

\$5 EXA  
TOTAL COST  
\$10.00

250

GO BACK

DONE

252

1ST

2ND

6.7 ← 246  
2 ← 248

FIG. 16

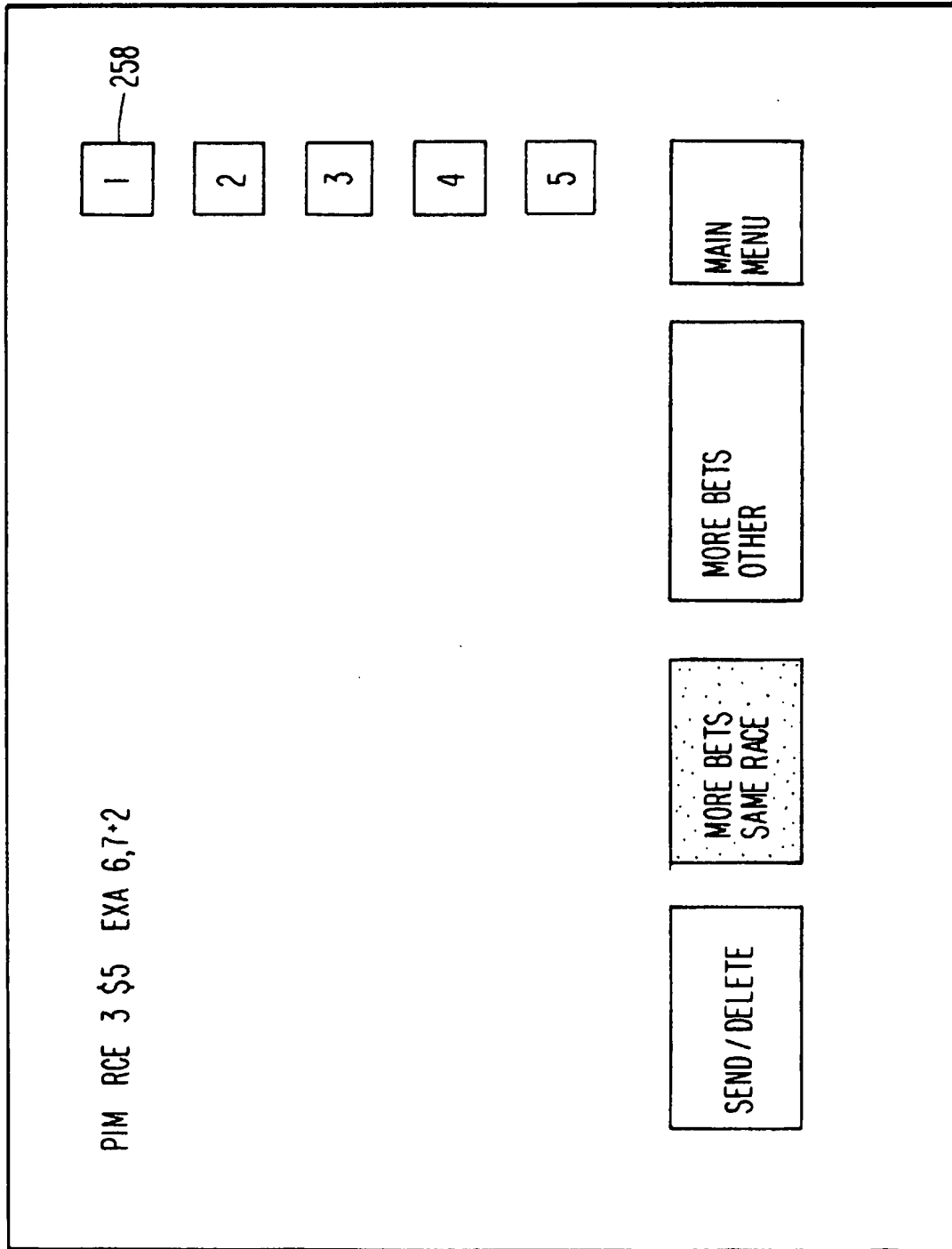
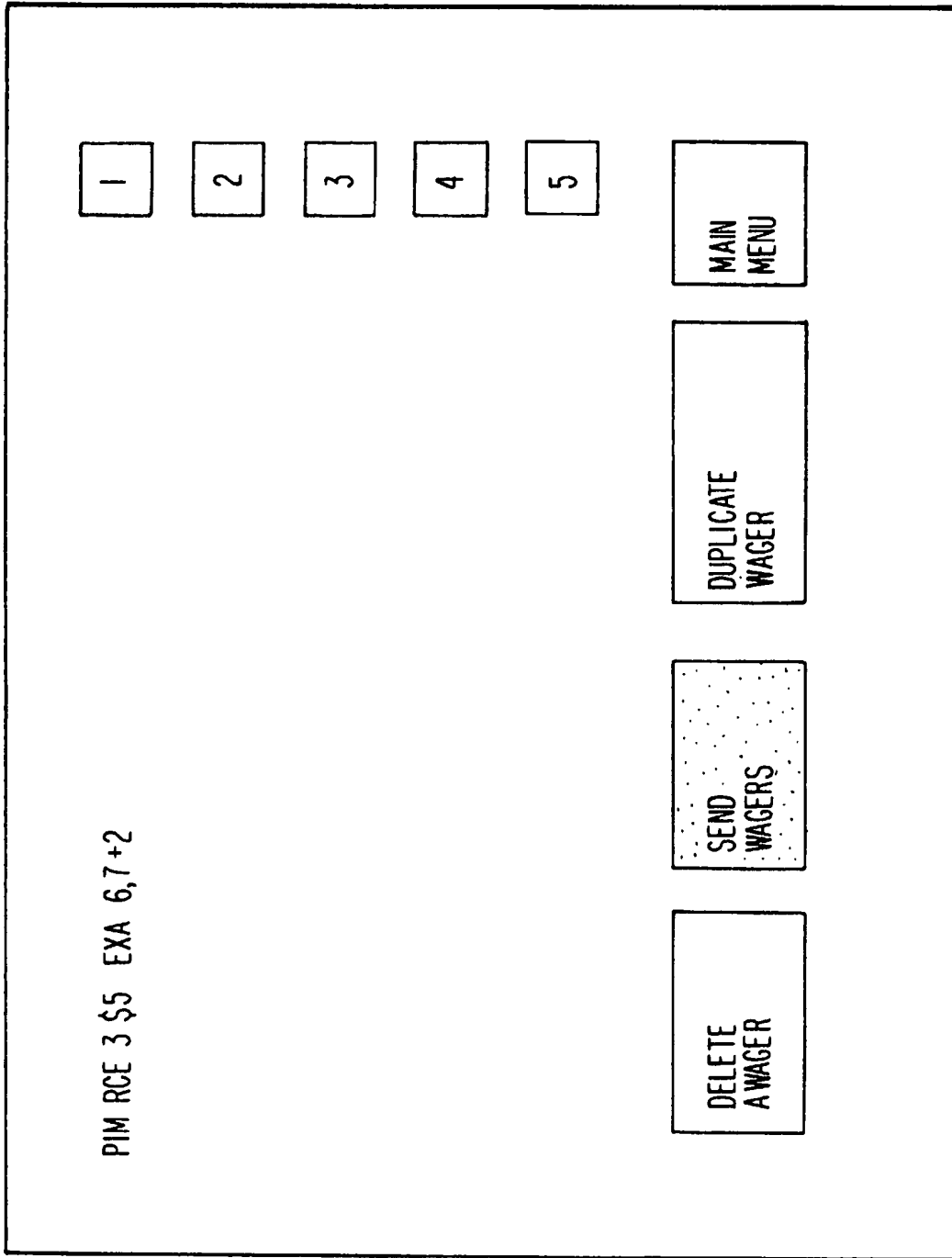
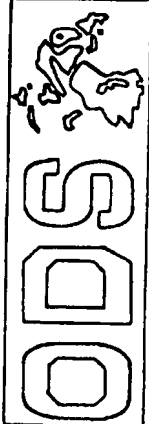




FIG. 17



262

| PIM<br>RCE 3 |      |  |       | 5 / 16 / 95<br>1:50 |  |
|--------------|------|--|-------|---------------------|--|
| HRS          | ODDS | WIN  | PLACE | SHOW                |  |
| 1            | 20/1 | 70   | 19    | 21                  |  |
| 2            | 8/1  | 91   | 24    | 12                  |  |
| 3            | 9/2  | 126  | 43    | 31                  |  |
| 4            | 7/2  | 128  | 17    | 8                   |  |
| 5            | 8/1  | 97   | 51    | 32                  |  |
| 6            | 3/1  | 340  | 110   | 117                 |  |
| 7            | 6/1  | 176  | 61    | 20                  |  |
| 8            | 10/1 | 19   | 11    | 5                   |  |
| TOTALS (ALL) |      | 1102   | 350   | 255                 |  |

268*FIG. 18*

FIG. 19

| ODDS |     | 1 AND |      | AND 1 |  |
|------|-----|-------|------|-------|--|
| 1    | 20  | - -   | - -  |       |  |
| 2    | 8   | 150   | 159  |       |  |
| 3    | 9-2 | 212   | 222  |       |  |
| 4    | 7-2 | 464   | 365  |       |  |
| 5    | 8   | 425   | 255  |       |  |
| 6    | 3   | 511   | 189  |       |  |
| 7    | 6   | 269   | 111  |       |  |
| 8    | 10  | 511   | 567  |       |  |
| 9    | 8   | 1277  | 1022 |       |  |

PIM - 3

1:50  
19 MIN.  
TO POST

EXACTA PAYS

274  
POOL: \$ 17,000

(USE UP/DOWN KEYS  
FOR NEXT HORSE)

|                                |    |                      |             |              |               |                 |
|--------------------------------|----|----------------------|-------------|--------------|---------------|-----------------|
| 280                            |    | 282                  | 292         | 294          | 296           | 288             |
| RACE 1                         |    | 5.00                 | CL \$17.5K  | CR68         | \$14.6        | AGE 2           |
| 290                            | P# | HORSE NAME           | DAYS<br>OFF | W/ST<br>D-SP | MORN.<br>ODDS | POWER<br>RATING |
|                                | 1. | BIG FUZZY            | 2           | 0/3          | 3/1           | 61.7            |
|                                | 2. | TRAE                 | 13          | 0/2          | 6/1           | 55.5            |
|                                | 3. | DIAMOND RIO          |             | 0/2          | 10/1          | 0.0             |
|                                | 4. | BUBBA FORBES         |             | 0/2          | 12/1          | 0.0             |
|                                | 5. | DESIARD              | 13          | 0/1          | 6/1           | 56.5            |
|                                | 6. | BYOU BUM             | 13          | 0/2          | 8/1           | 56.6            |
|                                | 7. | RUN IN THE FAST LANE | 2           | 0/1          | 12/1          | 51.2            |
|                                | 8. | SURF'S UP DUDE       | 13          | 0/1          | 7/2           | 57.7            |
|                                | 9. | RAJA'S BEST SWIN     | 13          | 0/2          | 10/1          | 55.7            |
| USE UP/DOWN KEYS FOR MORE INFO |    |                      |             |              |               |                 |

278**FIG. 20**

|                                      |  |            |           |          |            |
|--------------------------------------|--|------------|-----------|----------|------------|
| 304                                  |  | 308        | 310       | 312      | 314        |
| RACE 1 5.0 D                         |  | CL \$17.5K | CR 68     | \$14.6   | AGE 2      |
| P# HORSE NAME                        |  | SR         | SR<br>D/S | SR<br>HI | CR<br>LAST |
| 306                                  |  |            |           |          | 316        |
| 1. BIG FUZZY                         |  | 0          | 66        | 67       | 68         |
| 2. TRACE                             |  | 177        | 61        | 61       | 69         |
| 3. DIAMOND RIO                       |  | 184        | 0         | 0        | 0          |
| 4. BUBBA FORBES                      |  | 191        | 0         | 0        | 0          |
| 5. DESIARD                           |  | 198        | 62        | 62       | 68         |
| 6. BYOU BUM                          |  | 205        | 61        | 62       | 69         |
| 7. RUN IN THE FAST LANE              |  | 212        | 58        | 58       | 67         |
| 8. SURF'S UP DUDE                    |  | 219        | 54        | 54       | 68         |
| 9. ROJA'S BEST SWIN                  |  | 226        | 58        | 62       | 69         |
| USE UP/DOWN ARROW KEYS FOR MORE INFO |  |            |           |          |            |

302**FIG. 21**

|                                |             |            |                 |          |       |
|--------------------------------|-------------|------------|-----------------|----------|-------|
| RACE 1                         | 5.0D        | CL \$17.5K | CR 68           | \$14.6 K | AGE 2 |
| P#                             | HORSE NAME  | EARLY      | PACE ALL<br>MID | FIN      | #R    |
| 1.                             | BIG FUZZY   | 3.3        | 3.8             | 3.0      | 10    |
| 2.                             | TRACE       | 3.4        | 3.7             | 3.0      | 10    |
| 3.                             | DIAMOND RIO | ⋮          | ⋮               | ⋮        | ⋮     |
| 4.                             | ⋮           | ↑          | ↑               | ↑        | ↑     |
| 5.                             | ⋮           |            |                 |          |       |
| 6.                             |             | 322        | 324             | 326      | 328   |
| 7.                             |             |            |                 |          |       |
| 8.                             |             |            |                 |          |       |
| 9.                             |             |            |                 |          |       |
| USE UP/DOWN KEYS FOR MORE INFO |             |            |                 |          |       |

320**FIG. 22**

|                                |                      |            |      |         |       |
|--------------------------------|----------------------|------------|------|---------|-------|
| RACE 1                         | 5.0D                 | CL \$17.5K | CR68 | \$14.6K | AGE 2 |
| P#                             | JOCKEY/TRAINER       | WINS       | 1    | 2       | 3     |
| 1.                             | HERBERT, JR / BISANO | 2          | 2    | 4       | 2     |
| 2.                             |                      |            |      |         |       |
| 3.                             |                      |            |      |         |       |
| 4.                             |                      |            |      |         |       |
| 5.                             |                      |            |      |         |       |
| 6.                             |                      |            |      |         |       |
| 7.                             |                      |            |      |         |       |
| 8.                             |                      |            |      |         |       |
| 9.                             |                      |            |      |         |       |
| USE UP/DOWN KEYS FOR MORE INFO |                      |            |      |         |       |

332

*FIG 23*

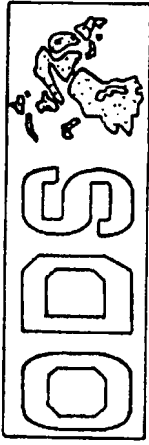
| PIM<br>RCE 2 |  | <div>5 / 16 / 95</div> <div>1:50</div> |
|--------------|--|--|
| RESULTS      |  |  |
| WIN          | PLACE  | SHOW                                   |
| 9            | 4.00   | 2.80                                   |
| 1            | 3.20   | 2.40                                   |
| 2            |  | 2.40                                   |
| 340 →        |  |  |

FIG. 24



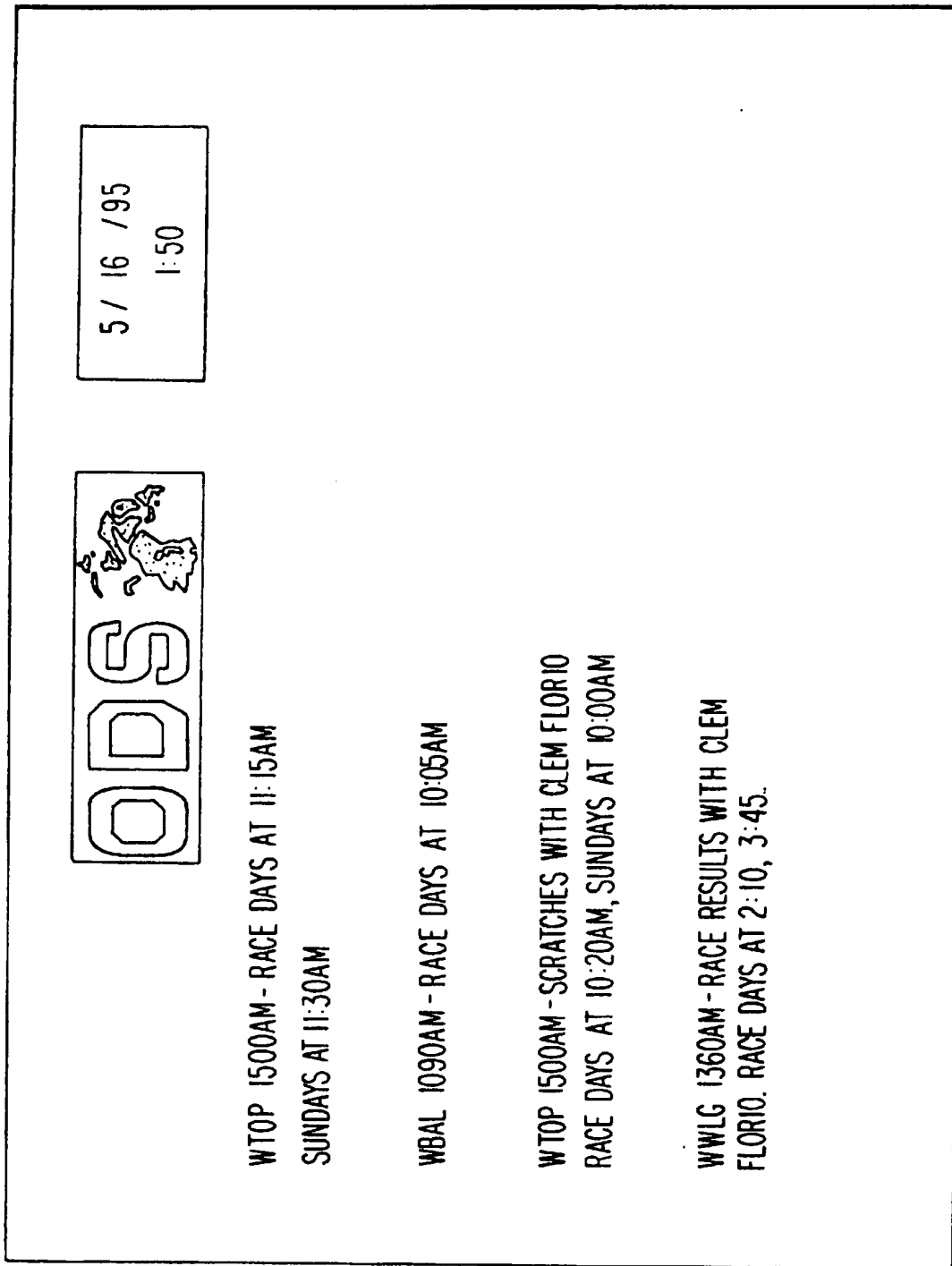
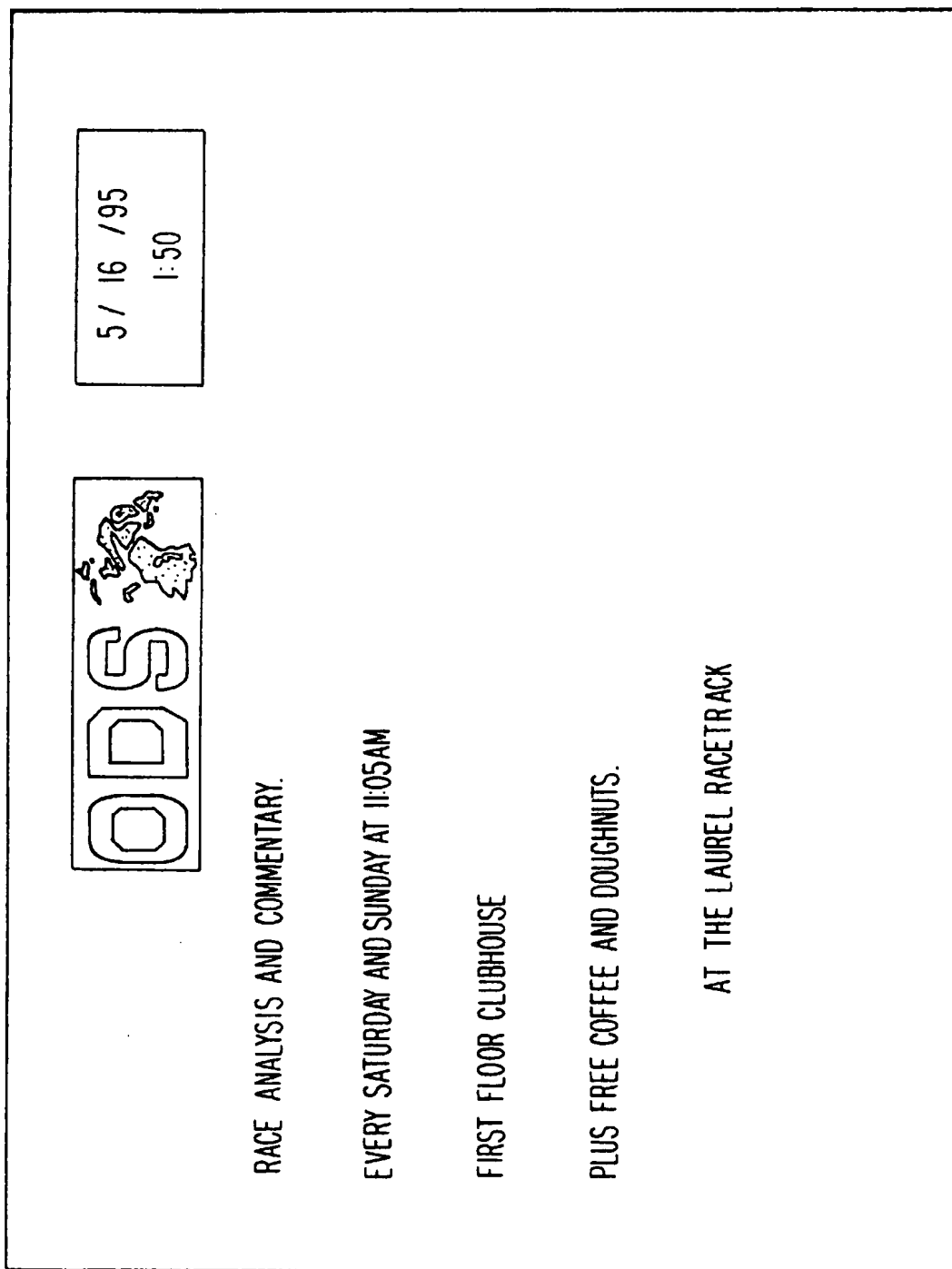
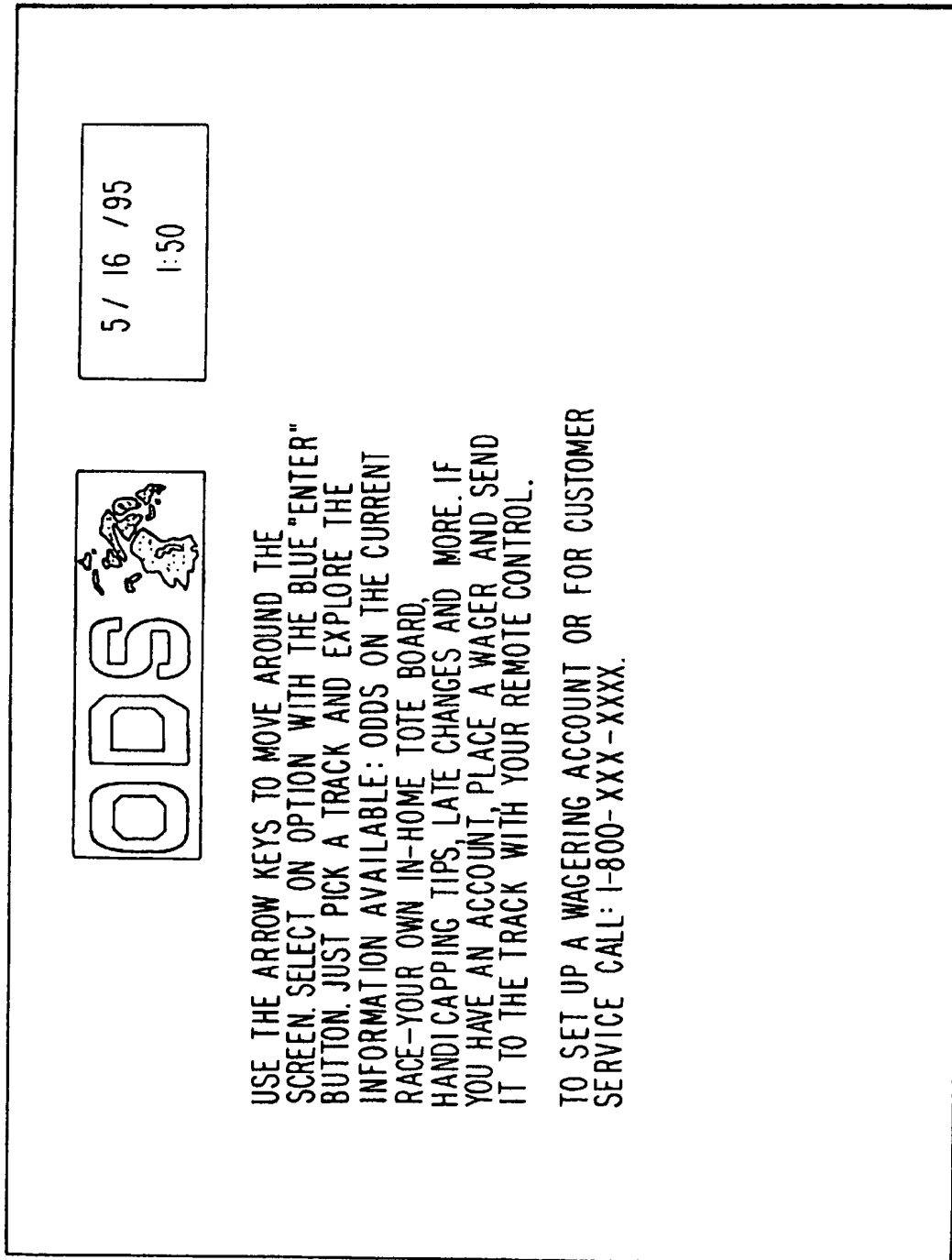
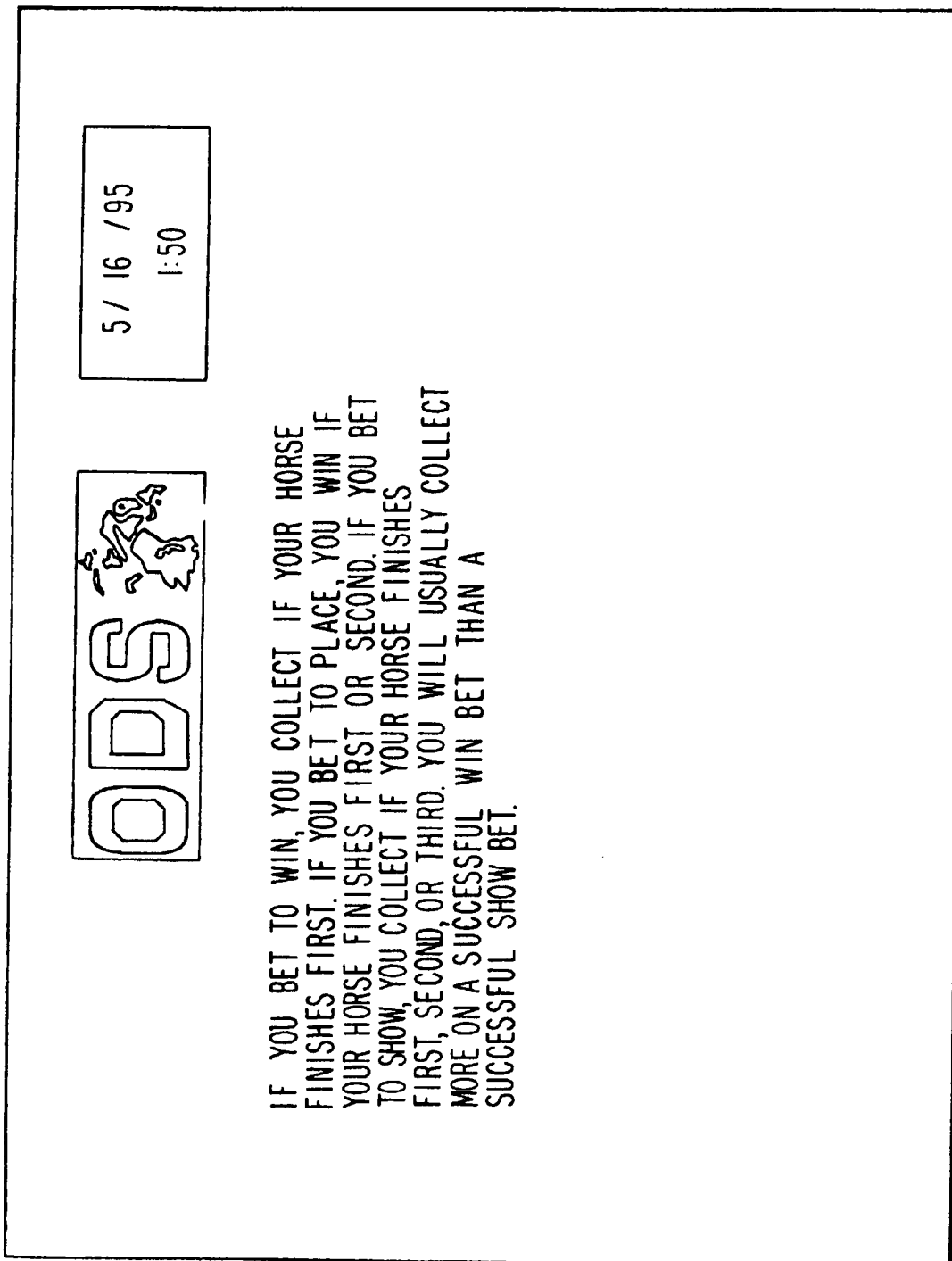


FIG. 25



*FIG. 26*

*FIG. 27*

*FIG. 28*

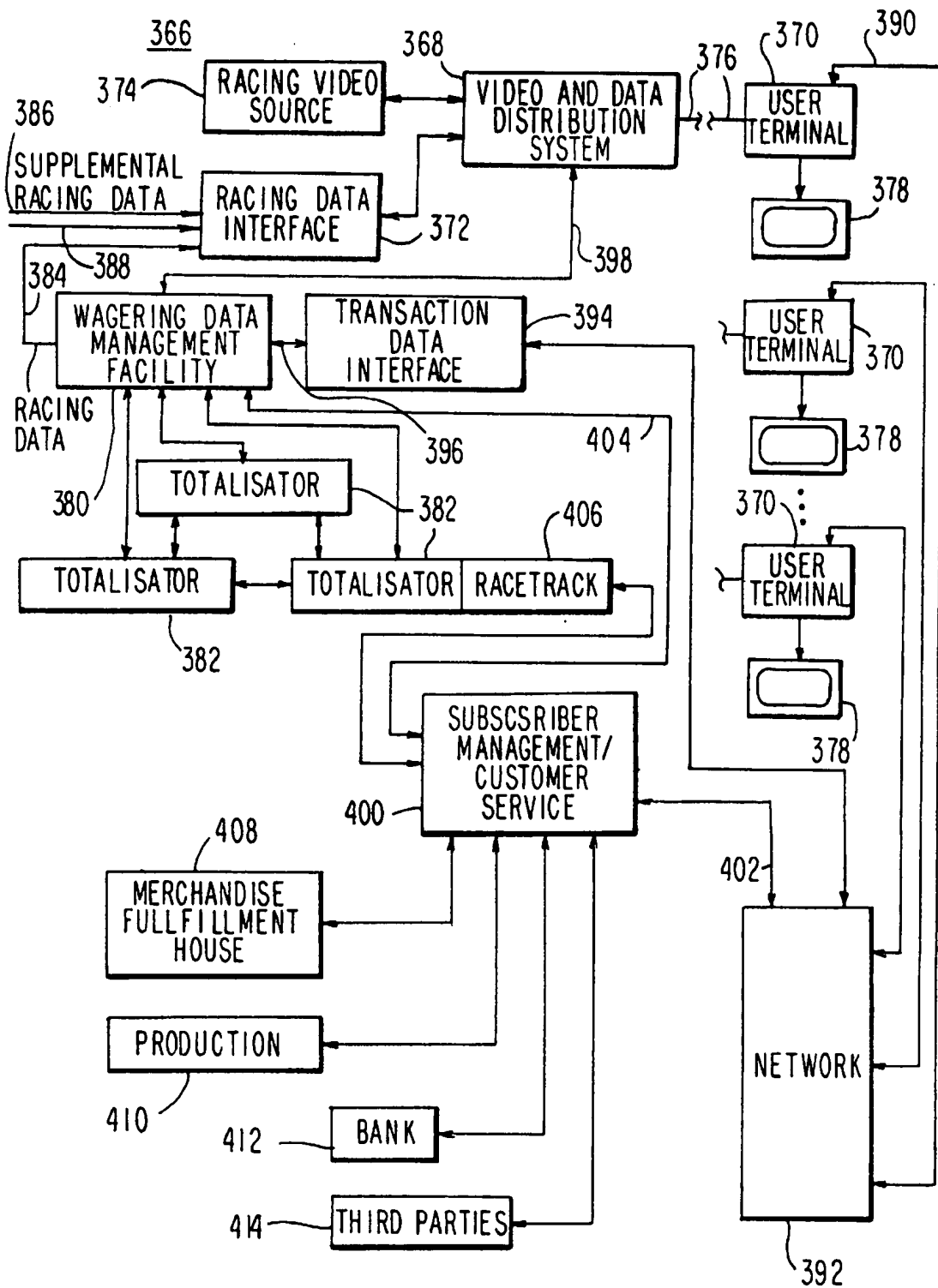


FIG. 29

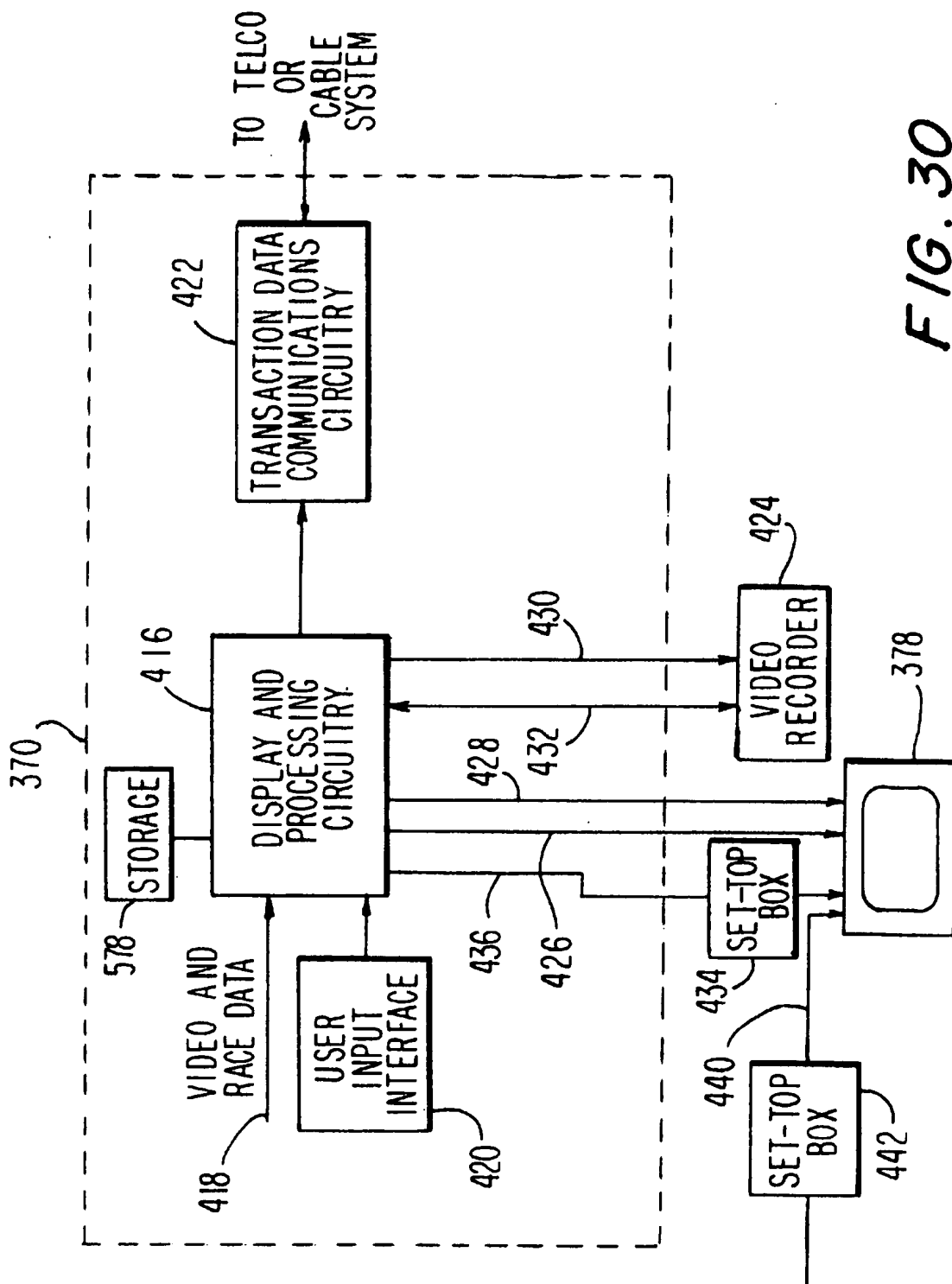
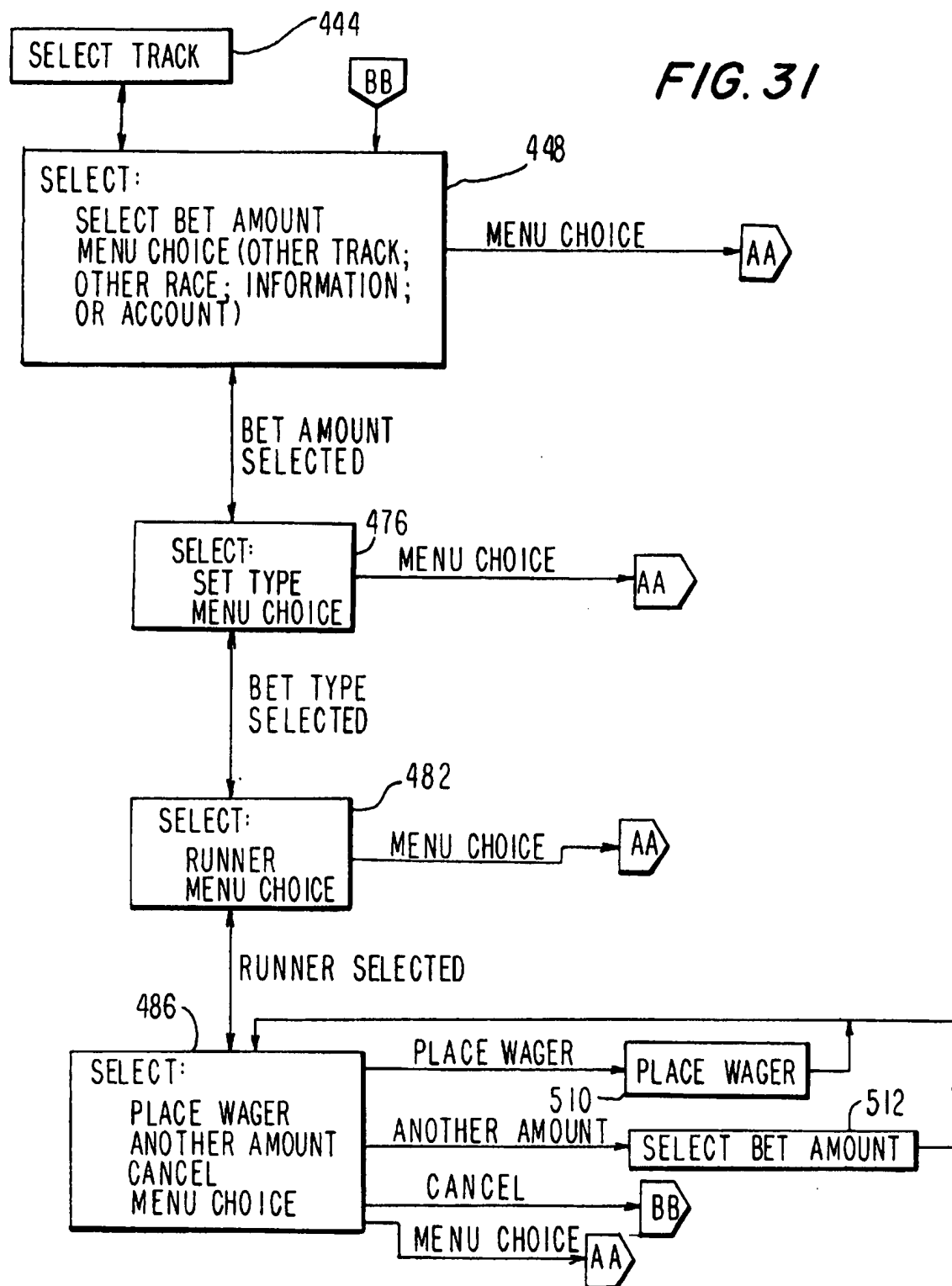


FIG. 30



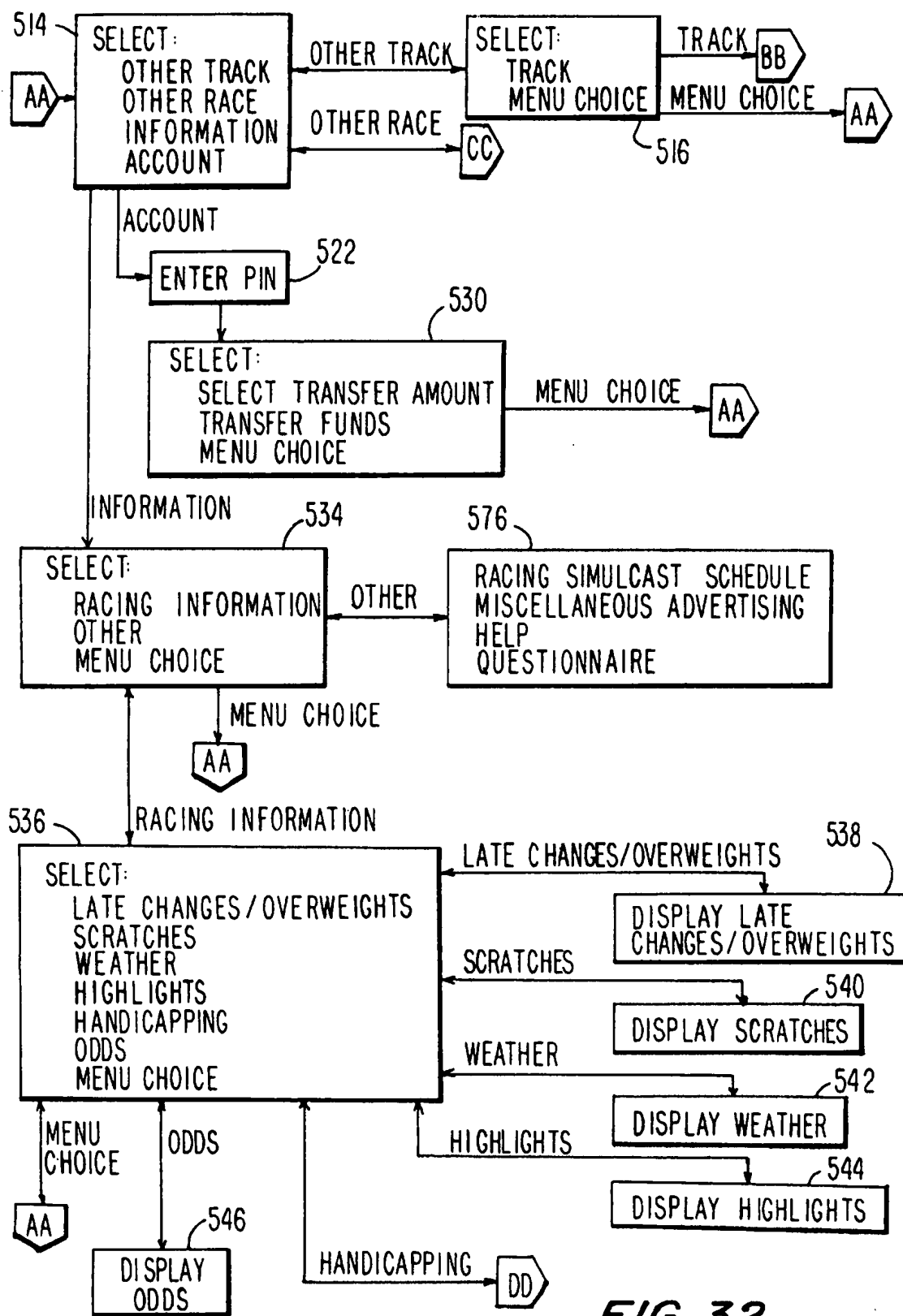


FIG. 32



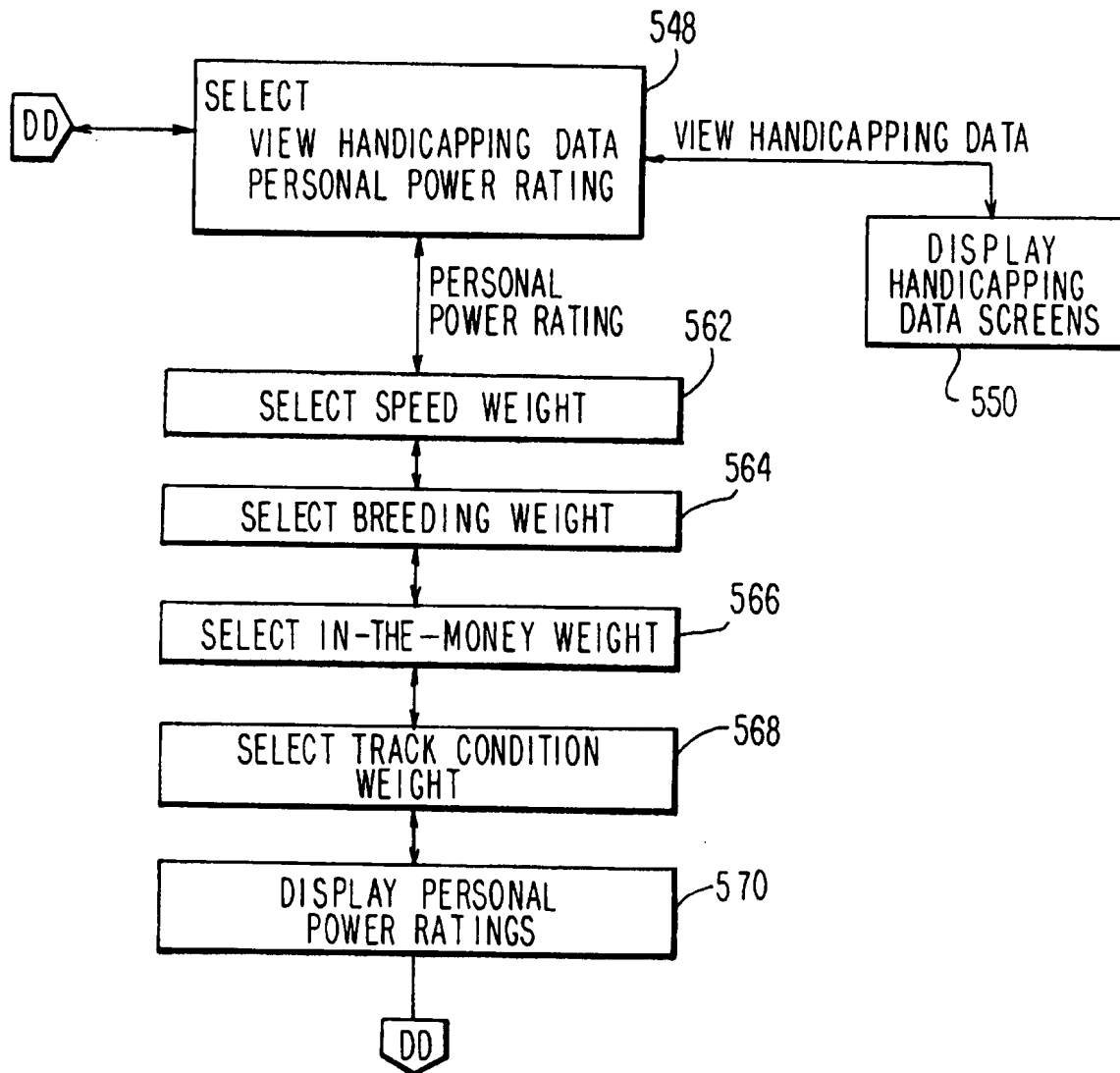


FIG. 33

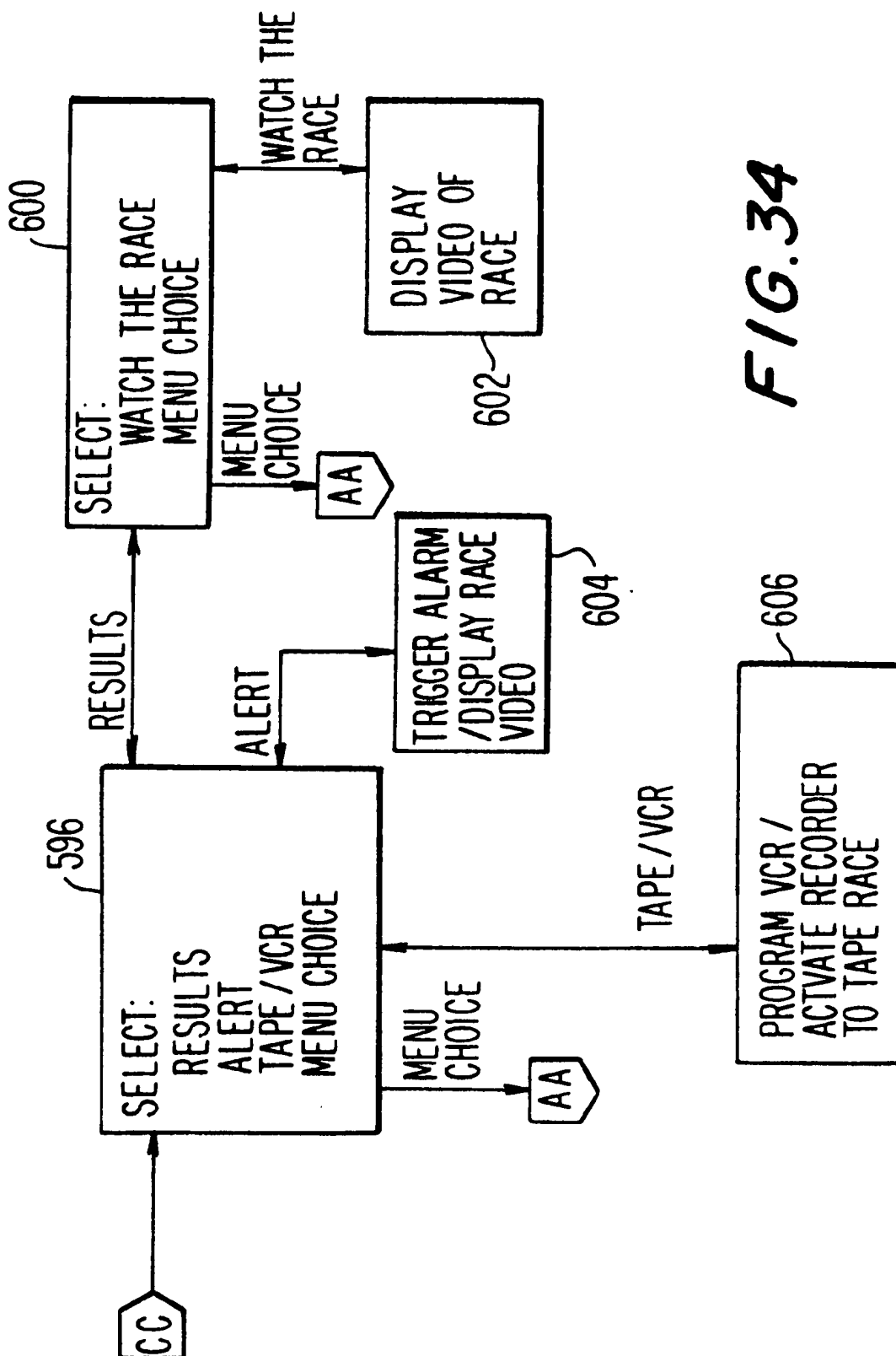
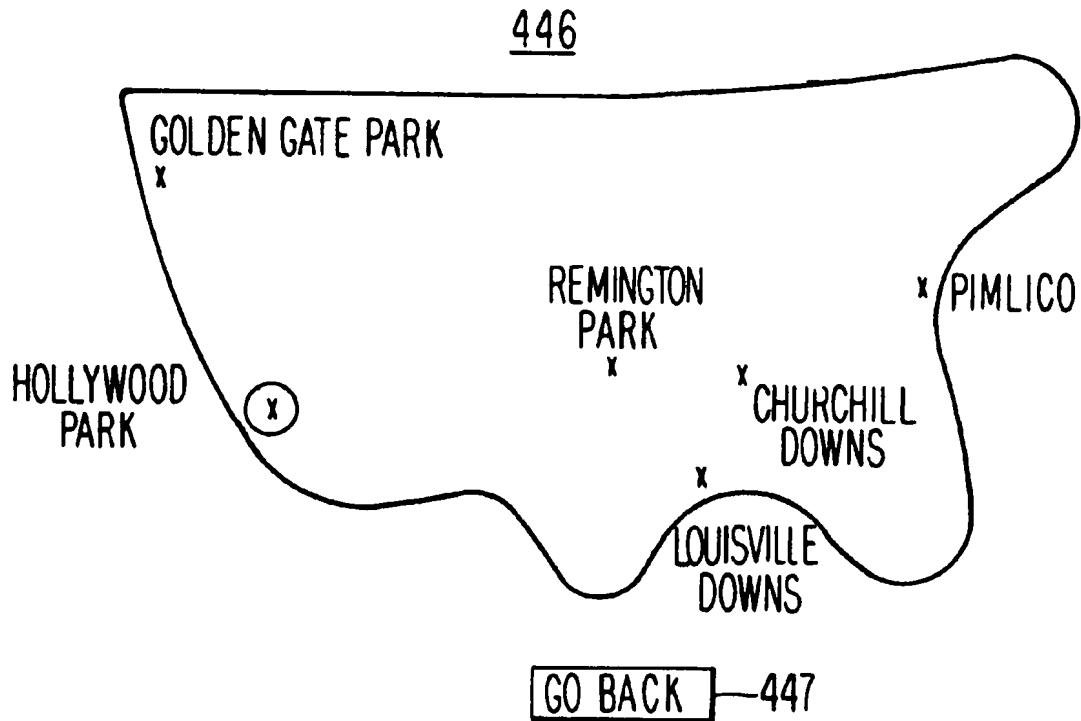


FIG. 34



**FIG. 35**

458
462
464

466
CHURCHILL DOWNS

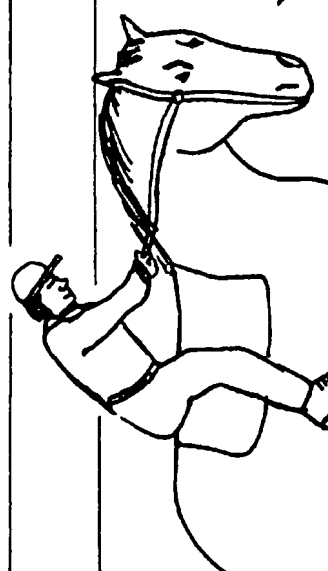
|   |     |
|---|-----|
| 1 | 4   |
| 2 | 3   |
| 3 | 5/2 |
| 4 | 8   |
| 5 | 22  |
| 6 | 12  |

7
9/5

8
14

9
3

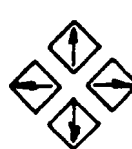
RACE 2 MIN TO POST 9



472
  
470
  
474

←
BACK
→

←
SELECT
→



SELECT BET AMOUNT

|      |      |      |       |       |
|------|------|------|-------|-------|
| \$1  | \$2  | \$3  | \$4   | \$5   |
| \$10 | \$20 | \$50 | \$100 | \$500 |

OTHER TRACK

OTHER RACE

INFORMATION

ACCOUNT

450
452
454
456

FIG. 36

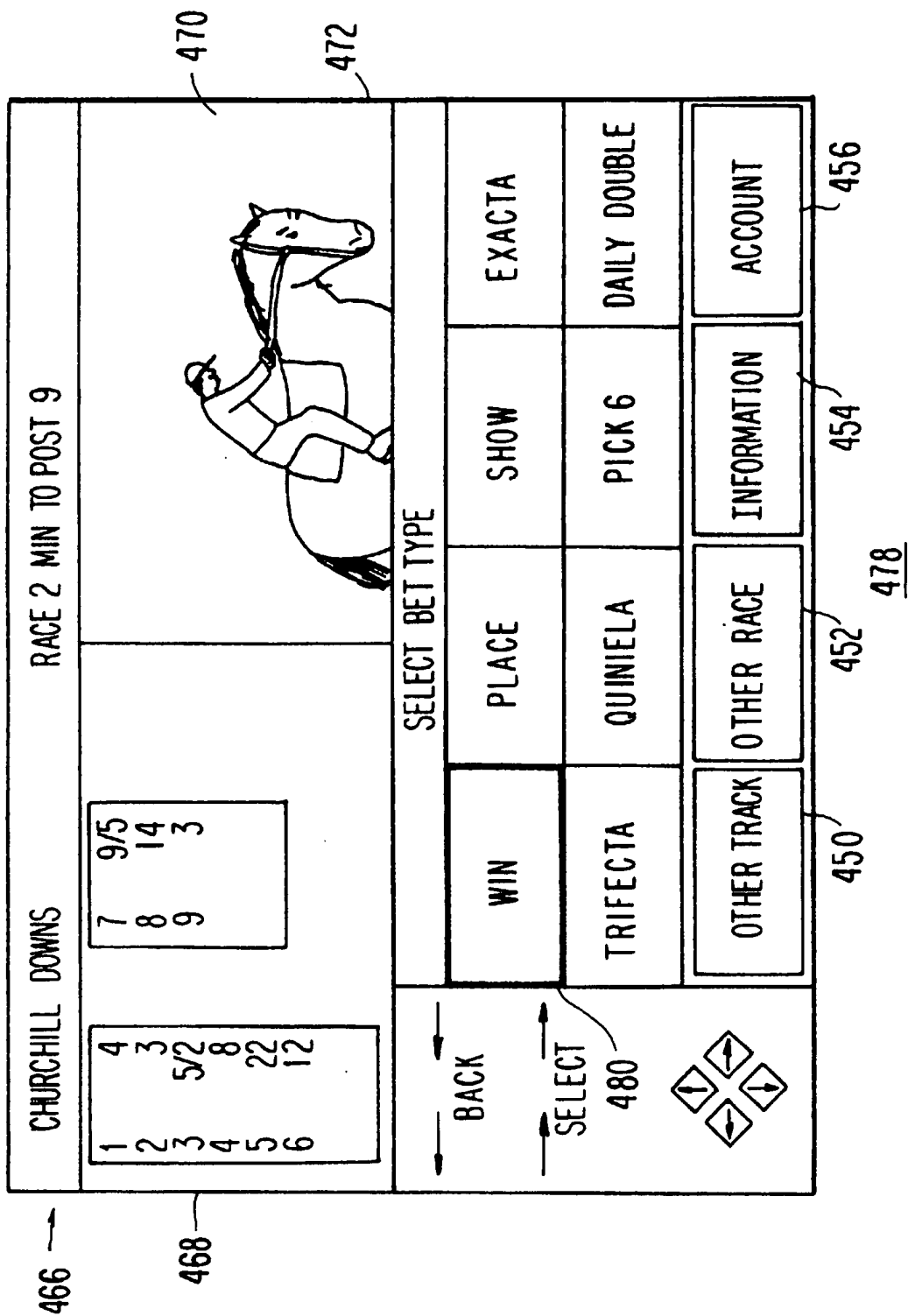


FIG. 37

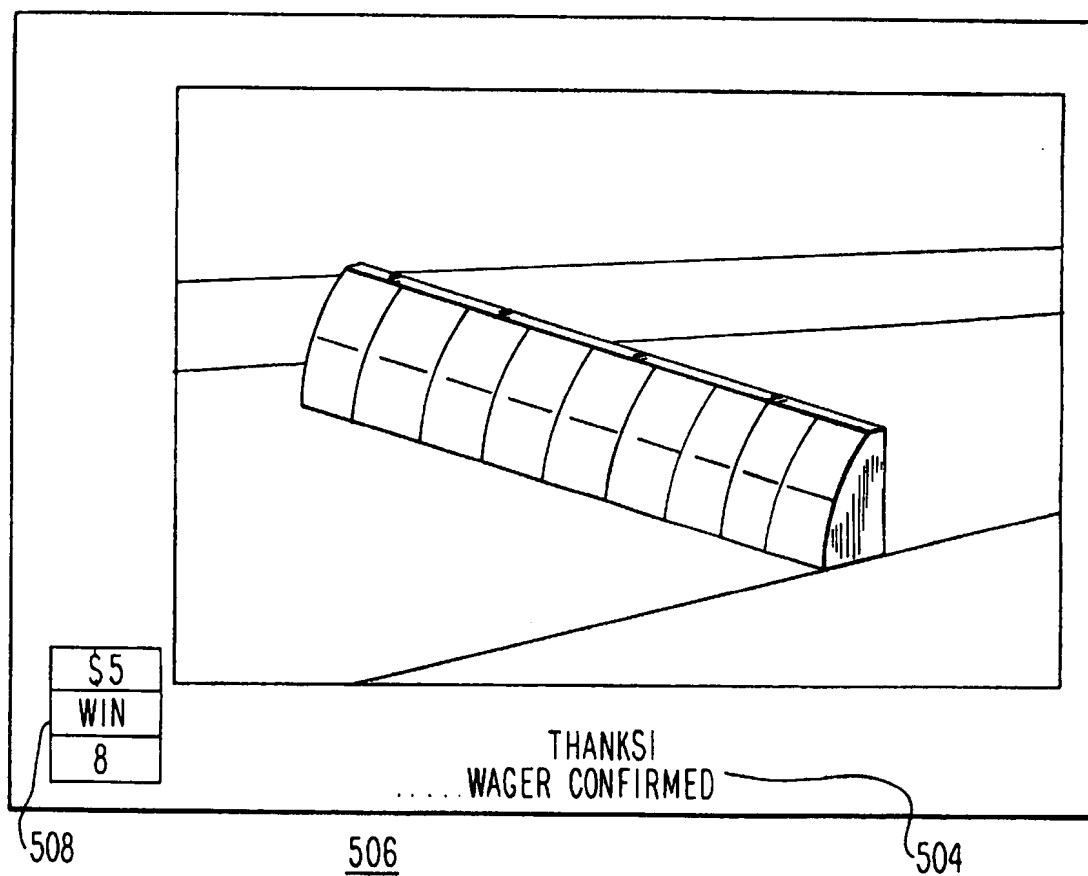
| CHURCHILL DOWNS   |  | RACE 2 MIN TO POST 9                           |   |            |   |             |         |
|---|--|--|---|------------|---|-------------|---------|
| <div><div>1 2 3 4 5 6</div><div>4 3 5/2 8 22 12</div></div> |  | <div><div>7 8 9</div><div>9/5 14 3</div></div> |   |            |   |             |         |
| <div><div>BACK</div><div>SELECT</div><div></div></div>      |  | SELECT HORSES                                  |   |            |   |             |         |
|   |  | 1  | 2 | 3          | 4 | 5           | 6       |
|   |  | 7  | 8 | 9          |   |             |         |
|   |  | OTHER TRACK                                    |   | OTHER RACE |   | INFORMATION | ACCOUNT |

FIG. 38

| CHURCHILL DOWNS   |  | RACE 2 MIN TO POST 9   |  |
|---|--|--|--|
| <div> <div> 1 2 3 4 5 6 </div> <div> 4<br/>3<br/>5/2<br/>8<br/>22<br/>12 </div> </div>                      |  | <div> <div> 7 8 9 </div> <div> 9/5<br/>14<br/>3 </div> </div>                    |  |
| <div> <div> ← BACK </div> <div> SELECT → </div> <div> </div> </div>   |  | <div> <div> </div> <div> </div> </div>   |  |
| <div> <div> WAGER 1 </div> <div> AMOUNT </div> <div> BET </div> <div> HORSE (S) </div> </div>               |  | <div> <div> 498 </div> <div> \$ 5 </div> <div> WIN </div> <div> 8 </div> </div>  |  |
| <div> <div> PLACE WAGER </div> <div> ANOTHER AMOUNT </div> <div> CANCEL </div> </div>                       |  | <div> <div> 488 </div> <div> 490 </div> <div> 492 </div> </div>                  |  |
| <div> <div> OTHER TRACK </div> <div> OTHER RACE </div> <div> INFORMATION </div> <div> ACCOUNT </div> </div> |  | <div> <div> 450 </div> <div> 452 </div> <div> 454 </div> <div> 456 </div> </div> |  |

FIG. 39

494

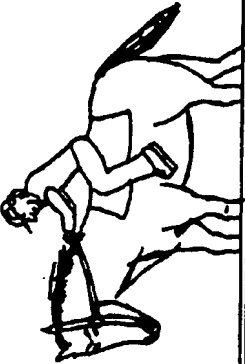

*FIG. 40*



|   |     |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
|---|-----|----------------------|---|---|---|-----|---|---|---|----|---|----|--|---|-----|---|----|---|---|--|--|
| CHURCHILL DOWNS   |     | RACE 2 MIN TO POST 9 |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| <div style="border: 1px solid black; padding: 5px;"> <table style="width: 100%; text-align: center;"> <tr><td>1</td><td>4</td></tr> <tr><td>2</td><td>3</td></tr> <tr><td>3</td><td>5/2</td></tr> <tr><td>4</td><td>8</td></tr> <tr><td>5</td><td>22</td></tr> <tr><td>6</td><td>12</td></tr> </table> </div> | 1   | 4                    | 2 | 3 | 3 | 5/2 | 4 | 8 | 5 | 22 | 6 | 12 | <div style="border: 1px solid black; padding: 5px;"> <table style="width: 100%; text-align: center;"> <tr><td>7</td><td>9/5</td></tr> <tr><td>8</td><td>14</td></tr> <tr><td>9</td><td>3</td></tr> </table> </div> | 7 | 9/5 | 8 | 14 | 9 | 3 |  |  |
| 1   | 4   |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| 2   | 3   |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| 3   | 5/2 |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| 4   | 8   |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| 5   | 22  |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| 6   | 12  |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| 7   | 9/5 |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| 8   | 14  |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| 9   | 3   |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <br/>BACK             </div> <div style="text-align: center;"> <br/>SELECT             </div> <div style="text-align: center;"> </div> </div>  |     | SELECT TRACK         |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| REMINGTON PARK  |     |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| LAUREL  |     |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| OAKLAND   |     |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| BELMONT   |     |                      |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| OTHER TRACK   |     | OTHER RACE           |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| OTHER TRACK   |     | INFORMATION          |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |
| OTHER TRACK   |     | ACCOUNT              |   |   |   |     |   |   |   |    |   |    |  |   |     |   |    |   |   |  |  |



518

*FIG. 41*

| CHURCHILL DOWNS  |     | RACE 2 MIN TO POST 9  |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
|--|-----|---|---|---|---|-----|---|---|---|----|---|----|---|---|-----|---|----|---|---|---|
| <div style="border: 1px solid black; padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">1</td><td style="width: 10%;">4</td></tr> <tr><td>2</td><td>3</td></tr> <tr><td>3</td><td>5/2</td></tr> <tr><td>4</td><td>8</td></tr> <tr><td>5</td><td>22</td></tr> <tr><td>6</td><td>12</td></tr> </table> </div>   | 1   | 4   | 2 | 3 | 3 | 5/2 | 4 | 8 | 5 | 22 | 6 | 12 | <div style="border: 1px solid black; padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">7</td><td style="width: 10%;">9/5</td></tr> <tr><td>8</td><td>14</td></tr> <tr><td>9</td><td>3</td></tr> </table> </div> | 7 | 9/5 | 8 | 14 | 9 | 3 |  |
| 1  | 4   |   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| 2  | 3   |   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| 3  | 5/2 |   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| 4  | 8   |   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| 5  | 22  |   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| 6  | 12  |   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| 7  | 9/5 |   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| 8  | 14  |   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| 9  | 3   |   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">             ←<br/>BACK           </div> <div style="text-align: center;">             SELECT<br/>→           </div> <div style="text-align: center;">  </div> </div>   |     | <div style="border: 1px solid black; padding: 5px; text-align: center;">ENTER PIN</div>   |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |
| <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">521<br/>←</div> <div style="border: 1px solid black; width: 60px; height: 40px; text-align: center; line-height: 40px;">0</div> <div style="border: 1px solid black; width: 60px; height: 40px; text-align: center; line-height: 40px;">0</div> <div style="border: 1px solid black; width: 60px; height: 40px; text-align: center; line-height: 40px;">0</div> <div style="text-align: center;">→ 521</div> </div> |     | <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 40%;">OTHER TRACK</div> <div style="border: 1px solid black; padding: 5px; width: 40%;">OTHER RACE</div> <div style="border: 1px solid black; padding: 5px; width: 40%;">INFORMATION</div> <div style="border: 1px solid black; padding: 5px; width: 40%;">ACCOUNT</div> </div> |   |   |   |     |   |   |   |    |   |    |   |   |     |   |    |   |   |   |

520

*FIG. 42*

| CHURCHILL DOWNS   |  | RACE 2 MIN TO POST 9  |   |
|---|--|---|---|
| <div style="border: 1px solid black; padding: 5px;">           1 4<br/>           2 3<br/>           3 5/2<br/>           4 8<br/>           5 22<br/>           6 12         </div>  | <div style="border: 1px solid black; padding: 5px;">           7 9/5<br/>           8 14<br/>           9 3         </div> |   | <div style="border: 1px solid black; padding: 2px;">\$180.20</div> <div>526</div> |
| <div style="display: flex; justify-content: space-around;"> <div>← BACK</div> <div>SELECT →</div> </div> <div style="text-align: center; margin-top: 10px;">  </div> |  | <div style="border: 1px solid black; padding: 5px;">ODS ACCOUNT BALANCE</div> <div style="border: 1px solid black; padding: 5px;">\$180.20</div> <div>526</div> |   |
| <div style="border: 1px solid black; padding: 5px;">SELECT TRANSFER AMOUNT</div>  |  |   |   |
| \$10  | \$20   | \$50  | \$100   |
| <div style="border: 1px solid black; padding: 5px;">TRANSFER FUNDS</div> <div>532</div>   |  |   |   |
| <div style="border: 1px solid black; padding: 5px;">\$500</div> <div>528</div>  |  | <div style="border: 1px solid black; padding: 5px;">ACCOUNT</div>   |   |
| <div style="border: 1px solid black; padding: 5px;">OTHER TRACK</div>   |  | <div style="border: 1px solid black; padding: 5px;">OTHER RACE</div>  | <div style="border: 1px solid black; padding: 5px;">INFORMATION</div>             |

524

FIG. 43


|   |  |   |  |
|---|--|---|--|
| CHURCHILL DOWNS   |  | RACE 2 MIN TO POST 9                              |  |
| <div> <div>1 2 3 4 5 6</div> <div>4 3 5/2 8 22 12</div> </div>  |  | <div> <div>7 8 9</div> <div>9/5 14 3</div> </div> |  |
| <div> <div>← BACK</div> <div>SELECT →</div> <div> </div> </div> |  |   |  |
| SELECT INFORMATION CATEGORY                                     |  |   |  |
| LATE CHANGES/OVERWEIGHTS  |  |   |  |
| SCRATCHES   |  |   |  |
| WEATHER   |  |   |  |
| HANDICAPPING  |  |   |  |
| OTHER TRACK   |  | OTHER RACE  |  |
| INFORMATION   |  | ACCOUNT   |  |

538

FIG. 44

| <u>RUNNER NO.</u> | <u>ODDS</u> | <u>ODDS<br/>PERCENTAGE</u> |
|-------------------|-------------|----------------------------|
| 1                 | 20          | 5.0 %                      |
| 2                 | 8           | 12.5 %                     |
| 3                 | 9/2         | 22.2 %                     |
| 4                 | 7/2         | 28.6 %                     |
| 5                 | 9/5         | 55.6 %                     |
| 6                 | 3           | 33.3 %                     |
| 7                 | 6           | 16.7 %                     |
| 8                 | 5           | 20.0 %                     |
| 9                 | 10          | 10.0 %                     |

***FIG. 45***

|  |   |                                   |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
|--|---|-----------------------------------|---|-------|---|---|---|---|---|----------|---|---|---|---|---|--------------|---|---|---|---|---|-----------------|---|---|---|---|---|
| CHURCHILL DOWNS  |   | RACE 2 MIN TO POST 9              |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| <div>1 4<br/>2 3<br/>3 5/2<br/>4 8<br/>5 22<br/>6 12</div>   |   | <div>7 9/5<br/>8 14<br/>9 3</div> |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
|    |   |                                   |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| SELECT YOUR PERSONAL POWER RATING  |   |                                   |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| 554<br>BACK  |   |                                   |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| 556<br>SELECT  |   |                                   |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| 558  |   |                                   |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| 560  |   |                                   |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| <table border="1"><tr><td>SPEED</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>BREEDING</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>IN-THE-MONEY</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>TRACK CONDITION</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table> |   |                                   |   | SPEED | 1 | 2 | 3 | 4 | 5 | BREEDING | 1 | 2 | 3 | 4 | 5 | IN-THE-MONEY | 1 | 2 | 3 | 4 | 5 | TRACK CONDITION | 1 | 2 | 3 | 4 | 5 |
| SPEED  | 1 | 2                                 | 3 | 4     | 5 |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| BREEDING   | 1 | 2                                 | 3 | 4     | 5 |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| IN-THE-MONEY   | 1 | 2                                 | 3 | 4     | 5 |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| TRACK CONDITION  | 1 | 2                                 | 3 | 4     | 5 |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| OTHER TRACK  |   | OTHER RACE                        |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |
| INFORMATION  |   | ACCOUNT                           |   |       |   |   |   |   |   |          |   |   |   |   |   |              |   |   |   |   |   |                 |   |   |   |   |   |

552

FIG. 46

FIG. 47

| ODS |  | PERSONAL POWER RATING RACE 3 |  |  |  |  |  |  |  |  |    |
|-----|--|------------------------------|--|--|--|--|--|--|--|--|----|
| 1   |  |                              |  |  |  |  |  |  |  |  | 65 |
| 2   |  |                              |  |  |  |  |  |  |  |  | 57 |
| 3   |  |                              |  |  |  |  |  |  |  |  | 72 |
| 4   |  |                              |  |  |  |  |  |  |  |  | 77 |
| 5   |  |                              |  |  |  |  |  |  |  |  | 85 |
| 6   |  |                              |  |  |  |  |  |  |  |  | 69 |
| 7   |  |                              |  |  |  |  |  |  |  |  | 79 |
| 8   |  |                              |  |  |  |  |  |  |  |  | 81 |
| 9   |  |                              |  |  |  |  |  |  |  |  | 62 |

572

574

580

HOLLYWOOD PARK

582

RACE 3 MIN TO POST 10

584

1 4

2 3

3 5/2

4 8

5 22

6 12

7 9/5

8 14

9 3

592

590

BACK

SELECT

594

SELECT BET AMOUNT

|      |      |      |       |       |
|------|------|------|-------|-------|
| \$1  | \$2  | \$3  | \$4   | \$5   |
| \$10 | \$20 | \$50 | \$100 | \$500 |

596

OTHER TRACK

586

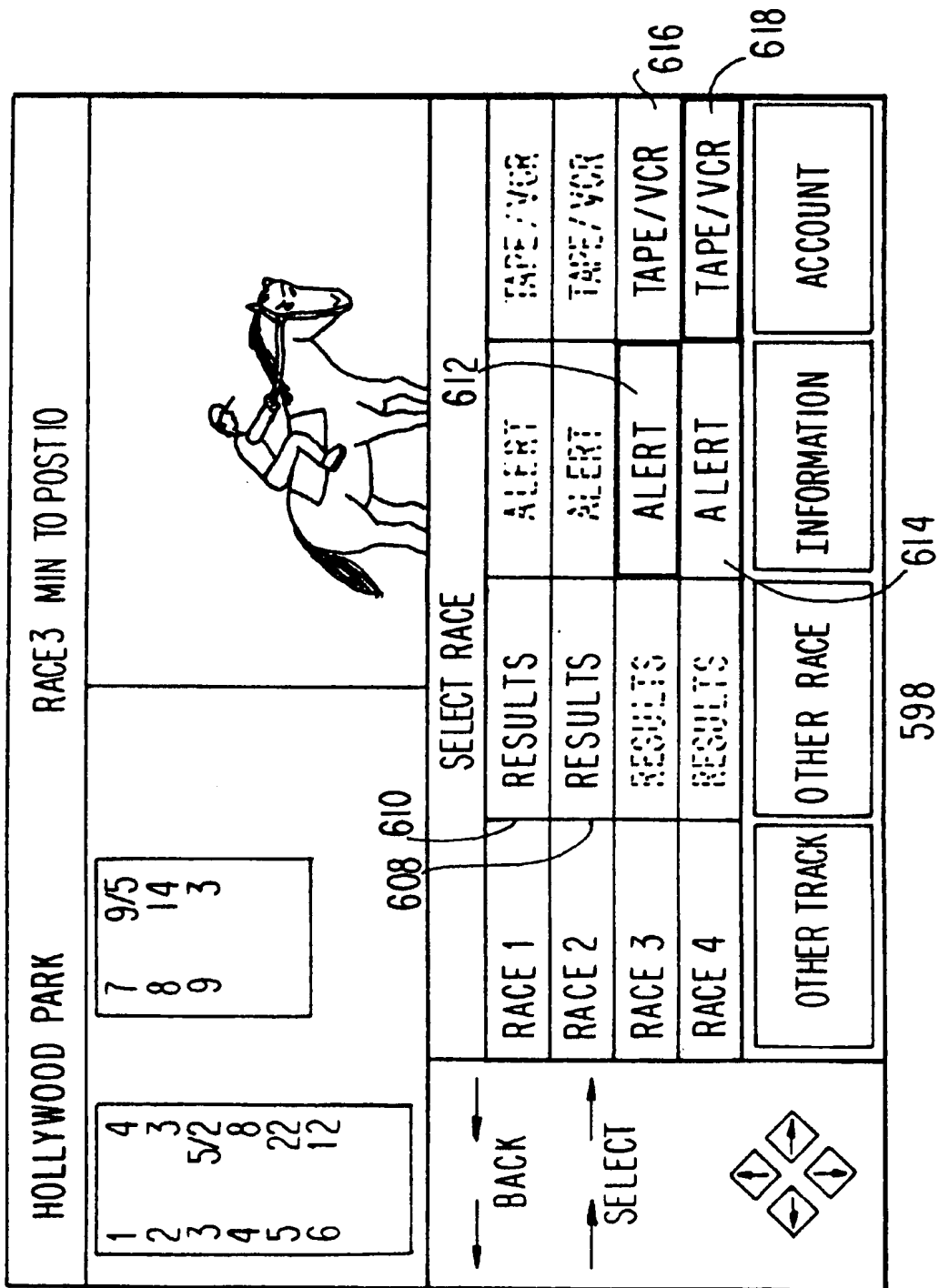
OTHER RACE

INFORMATION

ACCOUNT

FIG. 48





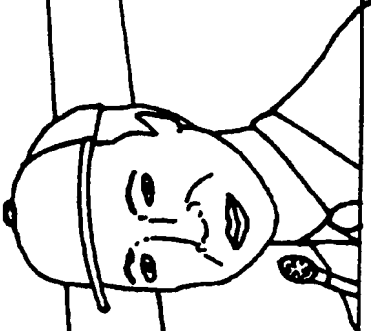




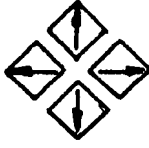
| HOLLYWOOD PARK   |                | RACE 1   |      | OFFICIAL  |
|--|----------------|--|------|---|
| 4 CALAMITY JANE  | 8.60           | 6.00   | 3.20 |  |
| 10 CISCO KID   | 4.60           | 2.80   |      |   |
| 6 CASH-IN-HAND   |                | 2.40   |      |   |
| EX: \$ 62.80   | TRI: \$ 128.40 | 1:12 2/5   |      |   |
| <div>   </div> <div>BACK</div>   |                | RESULTS  |      |   |
| <div>   </div> <div>SELECT</div> |                | <div>WACTH THE RACE!</div> <div>99¢</div>  |      |   |
|   |                | <div>OTHER TRACK</div> <div>OTHER RACE</div> <div>INFORMATION</div> <div>ACCOUNT</div> |      |   |

FIG. 50

## INTERACTIVE WAGERING SYSTEMS AND PROCESSES

This is a continuation of application Ser. No. 08/526,007, filed Sep. 8, 1995, now U.S. Pat. No. 5,830,068.

### BACKGROUND OF THE INVENTION

This invention relates to interactive wagering systems and particularly to interactive wagering systems for racetrack wagering. More particularly, this invention relates to off-track interactive wagering systems having user terminals for receiving racing videos and racing information via a medium other than conventional telephone lines and for displaying this information on a television monitor.

Wagering on sporting events such as horse, dog, and harness racing is a popular leisure activity. However, it is sometimes inconvenient to attend racing events in person. Not all racing fans have sufficient time to visit racetracks as often as they would like and some fans have difficulties in obtaining suitable transportation to the track. Thus, there is a need for wagering services for fans who cannot attend racing events in person.

Off-track betting establishments, which are generally more readily accessible than racetracks, have attempted to fill this need. However, a racing fan who desires to place a wager still faces the prospect of traveling to the off-track betting establishment.

Wagering via telephone is another option. A user of a telephone-based system typically sets up a telephone account against which wagers may be made. In order to place wagers, the user must interact with a computerized telephone ordering system by pressing appropriate buttons on a touch-tone telephone. This type of system is mainly used for placing wagers. Detailed racing information is typically obtained from other sources, such as printed racing programs.

Another approach for off-track wagering involves the use of dedicated devices that permit twoway serial modem communications with wagering equipment at a racetrack. These devices receive limited wagering information from the racetrack via telephone lines and provide it to a user on a liquid crystal display (LCD) screen. The user places a wager by making entries into the device which are then transmitted to the racetrack using the modem. Typical of this category of off-track wagering device are the Tiny TIM terminal of Autotote Systems, Inc., Newark, Del. and the terminal sold under the trademark "BetMate" of AmTote, Hunt Valley, Md.

Although it is possible to use terminals such as these in the home, doing so would monopolize the users' telephone line at certain times. And because the only data link with the racetrack using terminals such as the Tiny TIM or BetMate terminals is via telephone, it is not possible to receive racing videos with such terminals. In addition, the LCDs in these terminals make it difficult to display racing information in a way that may be easily viewed by the user. Because the Tiny TIM and BetMate terminals cannot be used with a television monitor, it is not possible for a user of such a terminal to display racing information on his home television set. Further, systems capable of interacting with off-track wagering terminals that use telephone lines to receive wagering information must provide a large number of simultaneous telephone connections to service each of the of the terminals. Because there is typically an extended connect time associated with each user, such systems are often unwieldy.

In addition, the racing information available through known off-track betting terminals is limited to a subset of the

racing information provided by the racetracks. For example, presently available terminals may allow a user to view "twin" odds (the amount wagered on a runner to win versus the amount wagered on competing runners to win). However, such terminals do not allow the user to view odds, pools, or predicted payoffs for wagers such as show, place, or more advanced wager types, such as exactas, trifectas, daily doubles, pick threes, pick fours etc.

Further, with presently known terminals, the user cannot receive or display any additional information, such as handicapping information, weather conditions, or information regarding which races at a particular track are available as video transmissions on a given day.

It would therefore be desirable to provide interactive wagering systems and processes that provide racing data to off-track wagering terminals via a medium other than conventional telephone lines.

It would also be desirable to provide interactive wagering systems and processes that provide racing data to off-track wagering terminals that display the racing data on a home television monitor.

It would also be desirable to provide wagering systems and processes that provide racing data and racing videos to off-track wagering terminals on which the racing data and racing videos are displayed.

It would also be desirable to be able to provide wagering systems and processes that provide an improved level of racing data to off-track wagering terminals.

### SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal receives racing data and video signals, displays the racing data on a monitor, and transmits wagers to a wagering facility.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal receives racing data from a cable headend or other transmission facility.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal receives racing data within the bandwidth of a television channel.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal provides a user with menu options allowing selection of a racetrack, a set of races within a racetrack (e.g., a morning or afternoon "performance"), a race, a wager type, wager amount, and runners.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal provides racing odds, pools, predicted and actual payoffs, and handicapping information.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal provides odds for wager types other than win odds, such as the odds for shows, places, exactas, trifectas, daily doubles, etc.

It is also an object of this invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal receives racing data from a racing data interface and racing videos from a source of racing videos and simultaneously displays the racing data and video signals on a monitor.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal presents a racing simulcast schedule on a monitor.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal allows a user to calculate a personal power rating based on the selection by the user of personal power rating "weights" for various handicapping categories. The user terminal calculates and displays a corresponding set of personal power ratings for a number of runners.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal displays race results in the form of prerecorded race videos supplied to a user on demand.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal alerts a user that a race is about to be run by triggering an alarm.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal sets a video recorder to record one or more preselected races.

It is also an object of the invention to provide interactive wagering systems and related processes for off-track wagering in which a user terminal transmits transfer instructions that initiate a transfer of funds from a bank account at a bank facility to a wagering account at a wagering facility or allows the user to draw directly from his bank account when placing wagers.

The present invention involves off-track wagering systems and related processes. Racing data such as the names and post positions of the runners that are in various races and the current odds and payoffs for those races are provided by a wagering facility (typically based on a system known as a "totalisator" located at a racetrack). Supplemental racing data such as the weather conditions at various racetracks may be provided by additional sources. A computer-based data concentrator processes the racing data from the totalisator and any additional sources and provides the racing data to a television network—typically at a main distribution node for a cable television network known as the "headend" facility. The cable headend provides the racing data to a number of user terminals. Typically, the cable headend provides the racing data with video signals on at least one television channel. Suitable approaches involve providing the racing data on a sideband or on a separate television channel.

If desired, the racing data may be distributed via satellite. With this approach, the racing data are provided within an available portion of the bandwidth of the television channel either in an available portion of the bandwidth of an analog television channel or as a portion of a digital television channel. Further, the racing data may be provided on a separate satellite channel or may be broadcast using a radio or television broadcast system.

Each user terminal receives the video signals and the racing data and separates out the racing data. Racing data are displayed on a monitor (preferably a conventional television monitor) using display and control circuitry. The racing data that may be displayed include odds, pools, and predicted and actual payoffs for selected wager types, races, and runners. The odds, pools, and payoffs for sophisticated wager types, such as exactas, trifectas, and daily doubles may be provided due to the relatively high bandwidth pathway that is made available between the data concentrator and each user terminal.

Another aspect of the invention relates to simultaneously displaying racing videos and racing data on a monitor. Racing data are provided from totalisators and from third party sources. A racing data interface processes the racing data and provides the processed data to a video and data distribution system. The racing video source provides racing videos to the video and data distribution system from a source of racing videos, such as live video feeds from racetracks.

The video and data distribution system may involve satellite distribution or distribution via a cable headend facility. Regardless of the medium over which the racing data and racing videos are distributed, the racing data are preferably provided with the racing videos on at least one television channel. One suitable approach for distribution of the racing data uses a frequency modulated carrier on a sideband of a television signal.

The racing data and racing videos are distributed to a number of user terminals. Preferably, the user terminals display the racing data and racing videos on a conventional television monitor.

The user can review the racing data at the user terminal in a variety of formats. For example, odds, pools, predicted payoffs, and actual payoffs can be displayed. Handicapping information can also be displayed. And additional information, such as news, weather, advertising, help, late changes/overweights, and scratches, etc. can be displayed. Based on this information, a user can select a desired racetrack or performance, which is a set of races at a particular track (i.e., a morning performance or afternoon performance). The user can also select a race, a wager type, wager amount, and one or more runners.

When a user has entered all of the data necessary to place a wager, the corresponding wager data are transmitted to a wagering data management system that preferably includes a totalisator for maintaining the user's wagering account. The wagering data management system adjusts the user's account based on the user's wagers. Typically, the user's account is debited when a wager is placed. If, following a race, a user's wager is successful, the wagering data management system credits the user's account accordingly.

Occasionally, the user may wish to transfer funds from a bank account into the wagering account at the wagering data management system. To do so, the user enters the amount to transfer and a personal identification code into the user terminal. This information is transmitted to an appropriate bank facility, which, after verifying the user's account information, authorizes the transfer of the selected amount of funds from the bank account into the wagering account. Alternatively, the user may place wagers directly against his regular bank account. A security measure that may be used, either in addition to requiring the personal identification code or as an alternative to the personal identification code is to use a physical key or access device, such as a smart card, magnetic stripe card, or electronic hardware key.

When the user desires to view the results of races that have been run, the user can place an order for a racing video of that race. The user terminal transmits the ordering information to, e.g., the video and data distribution center, which plays back the ordered racing video for the desired race. The user can also instruct the user terminal to trigger an alarm when an upcoming race is about to be run. Either an audible tone or a video message may be used to alert the user of the racing video for the upcoming race. If the user wishes to record a racing video, then the user enters the necessary race information into the user terminal. The user terminal either

programs a video recorder to record the desired race at a predetermined time, or directly actuates a video recorder to record the racing video when the appropriate time arrives.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects and advantages of the present invention will be apparent upon consideration of the following detailed description, taken in conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in which:

FIG. 1 is a block diagram of a wagering system constructed in accordance with the present invention;

FIG. 2 is a block diagram of a user terminal suitable for use with the wagering system of FIG. 1;

FIGS. 3-7 are logic flow diagrams illustrating the operation of the wagering system of FIG. 1;

FIGS. 8-28 are illustrative option menus and display screens suitable for use with the illustrative wagering system of FIG. 1;

FIG. 29 is a block diagram of an alternative embodiment of a wagering system in accordance with the present invention;

FIG. 30 is a block diagram of a user terminal suitable for use with the wagering system of FIG. 29;

FIGS. 31-34 are logic flow diagrams illustrating the operation of the wagering system of FIG. 29; and

FIGS. 35-50 are illustrative option menus and display screens suitable for use with the illustrative wagering system of FIG. 29.

#### DETAILED DESCRIPTION OF THE INVENTION

A schematic block diagram of a wagering system 100 constructed in accordance with the present invention is shown in FIG. 1. Wagering system 100 uses wagering machines known as "totalisators," such as totalisators 102, 104, 106, and 108, to generate wagering odds in realtime based on the wagers placed on racing events at various racetracks. Totalisators are available from companies such as Amtote International, Inc. of Hunt Valley, Md., Autotote Limited of Newark, Del., and United Tote Company of Shepherd, Mont. Typically, each racetrack has an installed totalisator for handling the wagering odds and information at that track. Thus, totalisators 102, 104, 106, and 108 are generally each located at a separate racetrack. Totalisators are also capable of communicating data between one another.

For example, as shown in FIG. 1, totalisators 102, 104, 106, and 108 are interconnected by data lines 110. Totalisators 102-108 communicate between one another using data lines 110 and a communication protocol known as the Intertote Track System Protocol (ITSP). The communication between totalisators 102-108 allows totalisators 102-108 to share pools, thereby allowing racing fans that interact with one totalisator to view odds and place wagers on races at other racetracks.

The odds and other racing data from each of the totalisators connected to totalisator 102 are provided to data concentrator 112. Data concentrator 112 is a computer-based system that receives racing data from totalisator 102 and provides the data to a suitable data distribution system for providing the data to racing fans in their homes. Typical racing data received from totalisator 102 include the current race at each track, which races and tracks are open for wagering, the post times of each race, and the number of

races associated with each track. Racing data from totalisator 102 also include the win, place and show "pool" totals for each runner (e.g., a horse) and the exacta, trifecta, and quinella payoff predictions and pool totals for every runner combination. Odds are provided for all races that have not started (i.e., those races for which wagering has not been closed). Totalisator 102 also provides the number of minutes remaining until post time for the current race at each track to data concentrator 112.

Other racing data provided by totalisator 102 to data concentrator 112 include race results, such as the order-of-finish list for at least the first three positions and payoff values versus a standard wager amount for win, place, and show, for each associated combination of the finish list. Also provided are payoff values for the winning complex wager types, including exacta, trifecta, quinella, pick-n (where n is the number of races involved in the pick-n wager), and daily double. The payoff values may also be accompanied by a synopsis of the associated finish list.

Further racing data provided by totalisator 102 to data concentrator 112 include the number of runners in each race, the valid wager amounts accepted by totalisators 102-108, and valid wager types accepted by totalisators 102-108. Racing data provided by totalisator 102 also include a scratch list of those runners entered but removed from a race.

Preferably, additional "program information" (racing information typically provided in printed programs) may be provided from totalisator 102 to data concentrator 112. Such program information may include early odds, early scratches, race descriptions (including the distance of each race and the race surface—grass, dirt, artificial turf, etc.), allowed class ratings (based on a fixed ratio of external criteria), purse value (payoff to winning runner), allowed age range of runners, and the allowed number of wins and starts for each runner.

In addition to receiving racing data from totalisator 102 at line 114, data concentrator 112 preferably receives supplemental racing data from third party information sources, such as Axcis Pocket Information Network, Inc. of Santa Clara, Calif., at input 116. Typical supplemental racing data include the post times of each race, jockey names, runner names, and the number of races associated with each track. Weather information is also available from third party data sources. For example, the weather for the city and state in which each racetrack is located can be obtained.

More detailed weather information, including track conditions, temperature, humidity, dewpoint, and a short status description of the current weather (sunny, raining, foggy, etc.) may also be provided. Some racing data, such as the data describing regional weather conditions may be widely available in an electronic format. Other racing data may need to be entered manually, via input 118.

Data concentrator 112 processes the racing data received at inputs 114, 116, and 118 and assembles the data into a suitable data format for transmission to distribution facility 120, which is preferably a cable headend. Transmission of the racing data between data concentrator 112 and distribution facility 120 may be via cable, satellite, or any suitable transmission medium with an adequate bandwidth to supply a large quantity of racing data in realtime.

Typically, large metropolitan cable television networks have at least several headend facilities. Television signals are provided to home viewers from the headends, generally using fiber optic cable and coaxial cable, collectively referred to here as "cable." Television distribution to the

home is also possible in a system in which headends or similar facilities capable of data transmission deliver television signals to user terminals 122 via satellite.

In wagering system 100, racing data are provided from distribution facility 120 to user terminals 122 via a distribution network 124, which uses either cable wired directly to the home, a system of home satellite receivers, or radio or television broadcasting equipment. An advantage of using cable, satellites, or broadcast systems in distribution network 124 is that video information along with large quantities of racing data may be supplied to a large array of user terminals 122 more economically than with other systems. Although racing data is preferably supplied to the user terminals using the same medium used for video transmissions, this need not be the case. For example, racing data could be broadcast over-the-air while video information is received by the user via cable or satellite. If desired, videos of races can be provided along with the racing data. Using this type of system, the user can receive the racing data continuously, without forcing the wagering system 100 to monopolize the user's telephone line.

User terminal 122, which is preferably microprocessor-based, supports software capable of coordinating the receipt and display of racing data and the placing of wagers electronically. Preferably, user terminals 122 generate easy-to-read menus on displays 126, which may be, for example, conventional television sets. User terminal 122 executes instructions that enable terminal 122 to process the racing data received from distribution facility 120 and display the data on display 126 in a suitable format. The user can interact with user terminal 122 using any suitable user interface, such as a keyboard, pointing device, or voice-actuated controller. Preferably, the user interacts with user terminal 122 using an infrared or other suitable type of wireless remote control.

In order to place wagers, a user typically establishes an account associated with a totalisator (e.g., at a particular racetrack). The user's account balance and other wagering transactional information is stored in the totalisator. Preferably, user terminal 122 includes suitable communication circuitry to establish a communications link with totalisator 102. One suitable method of establishing such a link is to use modem communications between user terminal 122 and totalisator 102. For example, telephone network 128 and telephone interface 130 support two-way communications between user terminal 122 and totalisator 102. If a user desires to place a wager, the data necessary to execute the transaction are transmitted via network 128. Telephone interface 130 processes the wager data so that the data may be received by totalisator 102. For example, if many incoming signals are received at once, telephone interface 130 receives them in parallel. Typically, once the user places a wager the user's account at totalisator 102 is debited. If the user's wager pays off, the user's account at totalisator 102 is credited by the appropriate amount.

User terminal 122 is shown in more detail in FIG. 2. Microprocessor 132 is connected to memory 134—preferably a read-only memory (ROM)—and memory 136—preferably a random-access memory (RAM) via bus 138. Bus 138 is also used to interconnect microprocessor 132 and memory 134 and 136 with display and control circuitry 140. Display and control circuitry 140 coordinates the operation of the various display, control, and communications peripherals of user terminal 122. Memory 134 and memory 136 contain instructions that are executed by microprocessor 132. Microprocessor 132 operates in conjunction with display and control circuitry 140 to direct the operation of user terminal 122.

Racing data and video signals are received at input 142 of FM receiver/analog-to-digital converter 144. The racing data are transmitted on an FM carrier in an open range within the bandwidth of the video signals. FM receiver/analog-to-digital converter 144 separates out the racing data signal and demodulates it to a digital format that is processed by display and control circuitry 140. The video signals received at input 142 are passed to multiplexer 146. When the user desires to view video programs corresponding to the video signals received at input 142, multiplexer 146 is switched to allow the video signals on line 148 to pass to monitor 126 (FIG. 1). The control signals used to switch multiplexer 146 may be provided by display and control circuitry 140 via line 152. Preferably, monitor 126 (FIG. 1) is a conventional television set.

The racing data that are received by user terminal 122 are stored in memory 136, so that microprocessor 132 can process this information as desired by the user. The user controls the functions of user terminal 122 via input interface 154, which is preferably a combination of a remote control 156 and a receiver 158. Based on user commands received via input interface 154, display and control circuitry 140 displays various information on monitor 126 (FIG. 1) using video generator 160 and display memory 162. The information to be displayed on monitor 126 (FIG. 1) is provided at output 164 of video generator 160. Display and control circuitry 140 generates an appropriate control signal on line 152, so that the output of video generator 160 is provided to monitor 126 (FIG. 1) via multiplexer 146.

User terminal 122 also has transaction data communication circuitry 166 provide a two-way communications link between user terminal 122 and totalisator 102 (FIG. 1). Transaction data communication circuitry 164 may be based on any suitable communication circuitry such as conventional modem circuitry for communicating via telephone lines. If the distribution network 124 (FIG. 1) supports two-way communications, then transmission and communication circuitry 164 may include appropriate back-haul circuitry to provide a communications link with totalisator 102 (FIG. 1) via a return path over distribution network 124 (FIG. 1) rather than over network 128 (FIG. 1).

In order to place wagers, the user must typically supply a personal identification code to the totalisator 102 (FIG. 1) at which the user maintains an account. The personal identification code is transmitted using the transaction data communication circuitry 166. By transmitting the personal identification code to totalisator 102 (FIG. 1) when placing a wager, the totalisator 102 (FIG. 1) can ensure that the user's personal identification code matches an authorized code, and can verify the user's account balance prior to authorizing the wager. As an added measure of security, user terminal 122 preferably also has a non-volatile storage device 169, which is used to maintain a local account balance and which contains a user's personal identification code. Suitable non-volatile storage devices include magnetic stripe cards and electronic hardware keys. Physical keys can also be used to provide additional security, if desired.

Preferably, non-volatile storage device 169 includes a smart card interface 168 that accepts smart card 170. Smart card interface 168 allows account and account verification information to be stored on smart card 170. Smart card 170 must be inserted in smart card interface 168 in order to place a wager. Thus, if a user removes the smart card 170, no wagers can be placed against that user's account by a third party, even if the user's personal identification code is known by that party.

In operation, user terminal 122 displays various menus of options on monitor 126 (FIG. 1). The menus can be invoked

by pressing an appropriate "enter" button on remote control 156. Remote control 156 also has cursor keys that allow the user to cursor forward and backward and up and down through the menus. In order to leave the system, the user presses an "exit" button on remote control 156.

The logical flow of the operation of wagering system 100 (FIG. 1) including menus and options provided by user terminal 122 (FIG. 2) is summarized in FIGS. 3-7. As shown in FIG. 3, at step 172 the user selects between several available options: "today's race tracks," "account information," "news and information," and "bet on the next race." A menu 174 corresponding to step 172 is shown in FIG. 8. As shown in FIG. 8, menu 174 preferably contains corporate logo 176 and date and time information 178. Menu options 180, 182, 184, and 185 are preferably displayed in the center of screen 186. To the left of menu options 180, 182, 184, and 185, are cursor boxes 186, 188, 190, and 191. In FIG. 8, cursor 192 is positioned adjacent to the next available menu option—option 180, thereby "highlighting" that option. When a user desires to select the highlighted option, the user presses "enter" or the "right" cursor key on remote control 156 (FIG. 1). If the user wishes to select a different menu option, the user moves the cursor to the next lower or higher menu option on menu 174 using cursor up/down keys on remote control 156 (FIG. 2).

As shown in FIG. 3, if the user selects "today's race-tracks" (menu option 180 in FIG. 8) at step 172, the user may then select a desired racetrack at step 196. A menu corresponding to step 196 is shown in FIG. 9. Racetrack menu options 198, 200, and 202 are racetracks available for wagering. Preferably, the list of available racetracks is provided by distribution facility 120 (FIG. 1) to user terminals 122 (FIG. 1), so that by controlling this list it is possible to "black out" certain racetracks.

Cursor 192 is used to highlight the desired track. The menu option adjacent to cursor 192 is also preferably highlighted by changing the color etc. of the option. The next race available for wagering at each racetrack and its corresponding post time are preferably listed adjacent to each track name. For example, the next available race at the Pimlico racetrack is race 3, which has a post time of 1:56. As with the available racetracks, the list of which races are scheduled is preferably provided to user terminals 122 (FIG. 1) by distribution facility 120 (FIG. 1). Accordingly, if it is desired to limit which races are available to the user, this may be done by making this selection at distribution facility 120.

After selecting a track, such as Pimlico, at step 196 (FIG. 3), the user selects a race at step 204 (FIG. 3). The race selection menus 206 and 208 for the Pimlico racetrack are shown in FIGS. 10 and 11. Preferably, the data in menus such as menus 206 and 208 and other menus/screens that are used to display racing data are periodically automatically updated (e.g., at least every 15 minutes) to reflect the most current racing data. To update the display automatically, user terminal 122 (FIG. 1) may display racing data as it is received from distribution facility 120 (FIG. 1) in realtime, or may update the display at predetermined time intervals, based on the most recently acquired data.

Menu 208 is illustrative of a type of menu that may be used whenever it is desired to display more information than fits easily onto a single screen. Races 1-8 are listed on menus 206 and 208. As shown in FIG. 10, the letter "F" is placed adjacent to races 1 and 2 to indicate that those races have been run and for which the results have been declared final. No wagers can be placed on these races. When menu

206 is displayed (at step 204 of FIG. 3), cursor 192 is placed at a default position adjacent to race 3, because that is the next race available for wagering. As shown in the upper left corner of menu 206, an abbreviation of the racetrack (in this case "PIM" for Pimlico) is displayed to remind the user of the currently selected racetrack. A user selects a desired race by moving cursor 192 to a race and pressing "enter" or an equivalent action button on remote control 156 (FIG. 2).

Returning to FIG. 3, after the user has selected a race at step 204, the user is presented with a menu of available options at step 212. For example, the user can place a wager or view current odds/probables, handicapping data, race results, or weather. If the user chooses to place a wager, the viewer selects an amount to wager at step 214. The amounts available for wagering are preferably transmitted to user terminals 122 (FIG. 1) from distribution facility 120, so that it is possible to limit which wagering amounts are available to the user as desired. Preferably, the user can select the wager amount using an interactive menu such as menu 216 shown in FIG. 12. On the left of menu 216, current odds 218 are listed for each of the runners (e.g., 1-9). Typically, win odds are listed. Thus, as shown on menu 216, the odds for runner 1 winning race 3 are 20 to 1.

The racetracks, races, wager types, wager amounts, and various other menu options that are available to the user at user terminal 122 (FIG. 1) may be controlled from the distribution facility 120 (FIG. 1). For example, the distribution facility 120 can limit the content of its transmissions to user terminals 122 (FIG. 1), so that only certain features are available. If it is desired to black out a given racetrack, then the racing data (and any accompanying instructions to be executed by user terminal 122 of FIG. 1) for that racetrack are not provided to user terminals 122. With this approach, the menu options of user terminals 122 (FIG. 1) may be configured on a system-wide basis.

If desired, user terminals 122 (FIG. 1) may also be individually addressable, which allows distribution facility 120 (FIG. 1) to provide different types of service to different sets of user terminals 122 (FIG. 1). Any suitable addressing technique may be used. For example, an addressing technique similar to that used in conventional addressable cable converter units may be used. User terminals 122 (FIG. 1) may be provided with preprogrammed authorization codes when they are manufactured or a user may be provided with an appropriate authorization code to enter into user terminal 122 (FIG. 1) (e.g., using remote control 156 or smart card 170). Distribution facility 120 (FIG. 1) transmits the racing data and any instructions that are to be executed by micro-processor 132 and display and control circuitry 140 (FIG. 2) in transmission blocks containing an authorization code. User terminals 122 (FIG. 1) compare each incoming transmission block with their authorization code. When the code matches, racing and other data within the transmission block are accepted for use by that user terminal 122 (FIG. 1).

Individual addressability allows selected subsets of user terminals 122 (FIG. 1) to be permitted to have access to certain racetracks, sets of races, wager types, or wager amounts. Because distribution facility 120 (FIG. 1) can provide preselected features to selected subsets of users, it is possible to provide various tiers of service, etc.

As shown in FIG. 12, on the right of menu 216 is an abbreviation 220 of the currently selected racetrack (i.e., "PIM" for Pimlico). Current race 222 is also listed (i.e., race 3). Information such as the current time and the time remaining to post time is displayed in box 225. Preferably, the post time blinks or otherwise changes its appearance

within a certain predefined time window prior to a race, so as to provide a visual clue that the start of the race is approaching.

When first presented to the user, menu 216 has a highlighted portion 224 (e.g., \$5). The user selects the desired wager amount by moving highlighted portion 224 using the up/down and left/right cursor keys of remote control 156 (FIG. 2). When highlighted portion 224 rests on the desired wager amount, the user presses the enter key on remote control 156 (FIG. 2). Highlighted portion 224 is then placed on the done box 226. If the user is ready to proceed, the user presses the enter key on remote control 156 (FIG. 2). If, instead, the user wishes to return to menus 206 and 208 (FIGS. 10 and 11), which correspond to step 212 (FIG. 3), then the user highlights and selects go back box 228.

As shown in FIG. 3, following selection of the wager amount at step 214, the user selects a desired type of wager at step 230. A typical wager type selection menu 232 is shown in FIG. 13. Additional wager types can be supported by providing additional wager selections on wager selection menu 232. Preferably, the wager types available at selection menu 232 are determined by distribution facility 120 (FIG. 1). Thus, the wager types available to the user may be controlled by limiting what information is transmitted from distribution facility 120 (FIG. 1) to user terminals 122 regarding wager types. Highlighted portion 234 initially rests on one of the wager types, such as WPS, which stands for win, place, and show. Other available wager types include, but are not limited to, WIN (win), PLC (place), SHW (show), WP (win-place), WS (win-show), and EXA (exacta). Suitable wager types also include trifecta, quinella, daily double, and pick-n type wagers (where n is a value from, e.g., 3 to 10).

Preferably, menu 232 is similar in appearance and layout to other menus, such as menu 216 (FIG. 12), so that the user is presented with a fairly uniform interface. For example, odds are shown at the left of menu 232, just as they are shown at the left of menu 216 (FIG. 12). Similarly, the racetrack abbreviation, race number, current time, and time remaining to post are shown on the right of menu 232 in the same way that this information is displayed in menu 216 (FIG. 12). By changing the overall layout of the menus as little as possible from one screen to the next, viewer confusion is minimized and screen storage requirements or the user terminal 122 are reduced. An additional item in menu 232, which is not shown in the wager mount menu 216 of FIG. 12, is selected wager amount 236 (\$5 in the example of FIG. 13).

As shown in FIG. 14, the user selects the desired bet amount by moving highlighted portion 234 to the desired wager type and pressing the enter key on remote control 156 (FIG. 2). In FIG. 14, an exacta wager was chosen by selecting EXA box 238. The selected wager type may be indicated in any suitable fashion, for example, by changing the color of the wager type box. Further, as shown in FIG. 14, code 240 corresponding to the selected wager type can be displayed. After an exacta wager (or any multi-leg single race wager) is selected, highlighted portion 234 is either automatically placed on BOX 242 or, preferably, onto DONE 243 with the ability to move the cursor onto BOX 242 to allow a user to place a box bet (any multi-leg wager where the first leg or list of runners is used for all legs of the wager). Placing a box bet is a simplified method of placing a wager using the same runner list for each leg of a multiple leg wager.

After selecting the wager type at step 230 of FIG. 3, the user selects runners at step 244. As shown in FIG. 15, for an

exacta wager the user selects one or more runners for first leg 246 and second leg 248. If more than one runner is selected per leg, the number of possible exacta wager combinations is automatically calculated and the total cost of the wager updated accordingly at box 250. When all desired runners have been selected, the user selects done box 252, which causes the system to proceed to step 254 in FIG. 3.

In step 254 (FIG. 3), wager queue menu 256 is displayed, as shown in FIG. 16. Each wager is summarized on a line adjacent to a wager number 258. In the example shown in FIG. 16, the first wager is an exacta wager on the third race at Pimlico. Shown at the bottom of menu 256 are the menu options send/delete, more bets same race, more bets other race, and main menu. These menu options are displayed at step 258 (FIG. 3) when the wager queue is not full. Typically, the wager queue can contain up to five wagers. Before additional wagers can be added, the wagers in the queue must be sent to the racetrack. If the wager queue is full following step 254 (FIG. 3), then the menu choices of delete a wager, send wagers, duplicate a wager, and main menu are displayed at step 260. The menu options made available at step 260 are limited by the state of the queue. For example if the queue is full, the option "duplicate a wager" will not be available, etc. A typical menu 262 on which these options are displayed is shown in FIG. 17.

The menu options listed in menus 256 and 262 (FIGS. 16 and 17) allow the user to modify the wagers listed in the queue, make additional bets, etc. For example, as shown in FIG. 3, if at step 258 the user selects "more bets same race," the user is returned to step 214, at which a new wager amount can be selected. The user can then proceed through steps 230, 244, 254, etc. as described above. If at step 258 the user selects "more bets other race," the user is returned to step 204, at which a new track may be selected. Another option at step 258 is to return to the main menu. If "main menu" is selected, the user is returned to step 172.

If the user selects "send/delete" at step 258 then the system proceeds to step 260 (menu 262 in FIG. 17). At step 260, the user has the option of deleting a wager that is no longer desired. For example, if the user wishes to delete wager 1, the user moves the highlighted portion of the menu to wager 1 and presses the enter key on remote control 156 (FIG. 2), whereupon the information for wager 1 is removed from menu 262 (FIG. 17). If "duplicate a wager" is selected, the user can make a copy of a wager, which appears on the next available wager line. Thus, if wagers 1 and 2 are filled, the user can position the highlighted portion of menu 262 (FIG. 17) adjacent to wager 1 and press enter. Wager 1 will then be duplicated as wager 3.

In order to place wagers, the wager information entered onto menu 262 must be sent to totalisator 102 (FIG. 1) via network 128 (FIG. 1). At the same time that a wager is sent, the user must transmit his personal identification code to allow the totalisator 102 (FIG. 1) to verify the status of the account against which the wager is to be placed. Totalisator 102 adjusts the user's account to reflect the results of the wager. If sufficient funds exist in the account, and if the wagering information is otherwise satisfactory, totalisator 102 (FIG. 1) will accept the wager and will typically debit the account. If the wager pays off, the account will be credited by the appropriate amount.

When a user is ready to send a wager to totalisator 102 (FIG. 1), the user selects "send wagers" from menu 262 in FIG. 17. Preferably, if no smart card is present, a message appears on monitor 126 (FIG. 1) instructing the user to insert



smart card 170 (FIG. 2). The user is next instructed to enter his personal identification code using remote control 156 (FIG. 2). The personal identification code is compared to a prestored personal identification code on smart card 170 (FIG. 2). If, from comparison of the entered personal identification code to the personal identification code stored on card 170 (FIG. 2), it is determined that the user is authorized to use the account, then the transaction data necessary to place the wager with totalisator 102 (FIG. 1) are sent to totalisator 102 (FIG. 1). During the process of sending the wager information to totalisator 102 (FIG. 1), the user is preferably provided with messages on monitor 126 (FIG. 1) that indicate when the system is dialing and sending the data, and when it has been confirmed that the wager has been sent.

If, instead of selecting "place wager" at step 212, the user selects "current odds/probables," the system proceeds to step 264, as shown in FIG. 4. At step 264, the user is presented with a menu listing which odds and statistics are available for viewing. If the user selects "odds/pools" at step 264, the user is passed to step 266, in which odds and pools are preferably displayed in a format shown in FIG. 18. In chart 268, the win odds for each runner are displayed adjacent to the number of that runner. Also listed in chart 268 are the dollar amounts of each pool of placed wagers for each bet type (win, place, or show). At the bottom of chart 268 is a total of all pools for each wager type: win, place, and show.

Wager odds for wager types other than win odds can also be shown. For example, show or place odds can be displayed. With previously known off-track terminals it has not been possible to display show and place odds. Accordingly, if a home racing fan desired such information, he would need to make calculations by hand. In contrast, with the present invention, user terminal 122 processes the racing data provided by totalisator 102 (FIG. 1), so that odds for many wager types are available. The user can therefore quickly and accurately review these odds interactively in the home.

Information regarding exacta, trifecta, and other complex wager pool totals and payoff values for the various wager combinations may be selected at step 264 (FIG. 4). Any suitable display format may be used to show the desired information. A typical exacta pays screen 272 is shown in FIG. 19. Win odds are listed for each runner and predicted exacta payoffs are listed for each of the possible exacta combinations of runners. Thus, if there are nine runners there are typically nine screens 272. The first screen 272 lists the payoffs for runner 1 as a first place finisher (1 and x), where x is each of runners 2-9. Also listed are the payoffs for runner 1 as a second place finisher (x and 1). Subsequent screens are used to provide information for other runners. For example, the second screen 272 lists the payoffs for runner 2 as a first and second place finisher. Another item listed on screen 272 is exacta pool 274.

The odds and payoffs for other sophisticated wager types, such as trifectas, daily doubles, pick three, pick four, etc. can be listed in the same fashion if desired. Due to the limited nature of previously available off-track betting terminals, it has not been possible to determine odds and payoff information for many sophisticated wager types. For example, it has not previously been possible to determine odds for various combinations of runners within the complex wager types. With the present invention, complex wagering information may be calculated and displayed by user terminal 122 (FIG. 2). Because it has not previously been possible to display such detailed information using an off-track terminal, such information has either been completely

unavailable or has only been available to racing fans who have traveled to the racetrack or to off-track betting establishments.

In addition, an advantage of the present system is that the user can interactively control the display of the odds and payoffs screens for the various wager types. For example, the user can move forward or backward through the wager information screens, such as screen 272 (FIG. 19), which shows the predicted payoff amounts if a particular runner combination wins an exacta wager. Previously known methods of displaying such information involve providing a non-interactive scrolling list of the information, e.g., on a monitor at a racetrack. But with that method it is necessary to wait until the information one wishes to view is presented on the monitor. In contrast, with the present invention the user can interactively advance forward and backwards through the screens such as exacta pays screens 272 as desired.

Returning to step 212 (FIG. 3), another menu option that can be selected by the user is to view handicapping data. If "handicapping data" is selected at step 212 (FIG. 3) then the user is presented with a menu of available handicapping data as shown at step 276 in FIG. 5. Preferably, the menu options available at step 276 include: snapshot power ratings, speed-class ratings, pace ratings, and jockey/trainer. If "snapshot power ratings" are selected at step 276, power ratings are displayed at step 277 (FIG. 5) on screen 278, as shown in FIG. 20. At the top of power ratings screen 278 is a banner including information such as race number 280 (e.g., race 1), race distance/surface 282 (e.g., 5 Furlongs on dirt), amount claimed 284, class rating 286, and runner age 288.

Below this banner, more detailed information pertaining to each runner is preferably listed. For example, runner name 290, number of days off since the last race 292, wins/starts for the selected surface and distance category 294, morning odds 296, and power rating 298. The information necessary to make-up screen 278 may be provided to the wagering system 100 (FIG. 1) via input 116 (FIG. 1).

In addition to displaying snapshot power ratings, a user can choose to display speed/class ratings at step 276 (FIG. 5). If "speed/class ratings" is selected at step 276 (FIG. 5), then at step 300 (FIG. 5) screen 302 of speed/class ratings is displayed, as shown in FIG. 21. Screen 302 preferably contains information banner 304, as in screen 278 (FIG. 20). Also in screen 302 are runner name 306, speed rating 308, speed rating for this distance and track surface 310, highest speed rating for this distance and track surface 312, class rating 314, and class rating of last race 316.

Another option is available if the user selects "pace ratings" at step 276 (FIG. 5). Selecting "pace ratings" takes the user to step 318 (FIG. 5), at which pace ratings screen 320 is displayed, as shown in FIG. 22. As with screen 278 (FIG. 20) and screen 280 (FIG. 21), screen 320 contains handicapping data for each runner. Preferably, screen 320 contains typical position at early call 322, typical position at middle call 324, typical position at finish 326, and number of races in calculation 328.

A further display of handicapping data is available if the user selects "jockey/trainer" at step 276 (FIG. 5). If jockey/trainer is selected, control passes to step 330 (FIG. 5), at which screen 332 is displayed, as shown in FIG. 23. Screen 332 contains handicapping information about the jockeys and trainers for each runner. Typically, such information includes jockey and trainer names 334 and information about recent race statistics 336. Other jockey/trainer information that can be provided includes information relating to jockey changes and overweights for each runner.

Returning to FIG. 3, another option available at step 212 is to display race results. If the user selects "results" at step 212, the results of the race selected at step 204 are displayed on the display 126 (FIG. 1) at step 338. One suitable format for displaying race results is shown in FIG. 24. Runner numbers 340 are displayed as well as payoffs for a standard wager (e.g., \$2) for win, place, and show bets. If desired, results can also be displayed for the more sophisticated wager types such as exactas, trifectas, daily doubles, pick three, pick four, etc.

The present invention allows the user to interactively control the display of the race results screens. For example, the user can select a track and page through the results for the various races at that track. Preferably, the user can use the cursor keys on remote control 156 (FIG. 2) to move between the race results screens for various races.

Another option available at step 212 in FIG. 3 is for the user to view weather and track conditions for a selected racetrack. If the user selects "weather/conditions" at step 212, weather information is interactively presented at step 342. The weather for the city and state in which the selected racetrack is located is preferably displayed, as is more detailed weather information, including track conditions, temperature, humidity, dewpoint, and a short status description of the current weather (sunny, raining, foggy, etc.).

If the user selects "account information" (menu option 182 in FIG. 8) at the initial menu displayed at step 172 (FIG. 3), the menu options "bet queue," "account information," and "transaction history" are displayed at step 344, as shown in FIG. 6. If "bet queue" is selected at step 344, the queue is viewed at step 346 and control then passes to step 260 (FIG. 3). At step 260, the user can select from the menu choices "delete a wager," "send wagers," "duplicate a wager," and "main menu," as described above.

If "transaction history" is selected at step 344 in FIG. 6, the user terminal 122 (FIG. 2) preferably retrieves information concerning recent transactions such as wagers placed and the results of these wagers from smart card 170 (FIG. 2) at step 348. If desired, this information can be retrieved remotely, from totalisator 102. Using the retrieved information, the user's transaction history is displayed at step 350. After the user is finished reviewing the recent transaction history, the user is returned to step 172 (FIG. 3), where the initial menu options are displayed.

If the user selects "account balance" at step 344, at step 351, the user selects whether to retrieve his account balance remotely, from totalisator 102 (FIG. 1), or locally at terminal 122, from smart card 170. If the user selects "remote" at step 351, then the user enters his personal identification code at step 352. User terminal 122 (FIG. 2) then obtains current account information from totalisator 102 (FIG. 1) and displays this information at step 354. If the user selects "smart card" at step 351, then the user enters his personal identification code at step 353. User terminal 122 (FIG. 2) then obtains current account information from smart card 170 (FIG. 2) and displays this information at step 355. Preferably, information retrieved from smart card 170 (such as account balances) is for informational purposes only. No wagers can be authorized solely through the account information on smart card 170 (FIG. 2). This prevents unauthorized wagering if the card is tampered with. After the user is finished reviewing the account balance at step 354 or step 355, the user is returned to step 172 (FIG. 3), where the initial menu options are displayed.

The benefit of storing account and transaction history information locally on smart card 170 (FIG. 2) is that it is not

necessary to communicate with totalisator 102 (FIG. 1) each time it is desired to review such information. Because the user does not need to communicate with totalisator 102 (FIG. 1) for routine transaction history and account balance queries, the user avoids any fees that may be associated with such queries. The user also reduces the frequency with which he needs to use his telephone line. Further, data corresponding to additional wagering transactions, such as recent wagering activity, may be stored on smart card 170 (FIG. 1).

The account and transactional information for each user is preferably stored on his individual smart card 170 (FIG. 2). This allows the user to visit other homes in which there are user terminals 122 (FIG. 1), without losing ready access to his account information. Alternatively, the account and transactional information can be stored in a suitable memory device in user terminal 122 (FIGS. 1 and 2).

Another menu option available at step 172 of FIG. 3 is the option to view news and information. If "news and information" (menu option 184 in FIG. 8) is selected at step 172, a submenu of news and information options is displayed at step 356, as shown in FIG. 7. The illustrative menu options displayed at step 356 include the option of viewing information about schedule times for racing video simulcasts available to the user. Racing simulcasts may be available via satellite, cable, broadcast, or other suitable video transmission medium. Typically, not all of the races run at the various racetracks are simulcast on television. Certain racetracks may not wish to create a disincentive for racing fans in the area to visit the track in person. For other racetracks there may not be sufficient demand to warrant the effort of televising all of the races. And because the post times of races are typically determined locally by the management of the racetrack, they may be subject to last minute changes or unforeseen delays. For each of these reasons, it is difficult or impossible for a user to accurately determine which races are currently available via simulcast. Accordingly, with the present invention, when the user selects "simulcast schedule" at step 356, a current schedule listing the races available via simulcast is displayed.

Other menu options available at step 356 include commercial advertisements. As shown in FIG. 7, menu option 358 is an advertisement called "Laurel on the Air," which could be, for example, local advertising for upcoming events on television or radio relating to the Laurel racetrack. An illustrative listing for Laurel on the air is shown in FIG. 25.

Menu option 360, entitled "handicapping seminar" could be, for example, an advertisement for an upcoming seminar on handicapping techniques to be presented at a particular racetrack. An illustrative handicapping screen is shown in FIG. 26.

Menu option help 362 allows the system to display help information. For example, explanations of how to use the terminal 122, how to place certain types of wagers, or how to handicap effectively may be provided. A submenu that may be provided after menu option help 362 has been selected includes menu options "using the system," "how to bet," and "handicapping information." FIG. 27 shows a screen that can be displayed if "using the system" is selected. FIG. 28 shows a screen that can be displayed if "how to bet" is selected followed by information on "win, place, and show" bets. Information on additional wager types is preferably available by pressing an advance or equivalent cursor on remote control 156 (FIG. 2). If "handicapping information" is selected from the submenu, then descriptions of the various types of handicapping informa-

tion available (see, e.g., FIGS. 20-23) are provided. The menu option 364 (FIG. 7) entitled "other" allows additional information to be provided.

The news and information menu options available at step 356 are illustrative only. As explained in connection with descriptions of further embodiments of the present invention, additional features may be added if desired, such as the ability to add video information to the services described above.

If desired, "hot" buttons may be used to provide shortcuts through the menu hierarchy of FIGS. 3-7. For example, a hot button 185 labeled "bet on the next race" may be provided as menu option 185 in FIG. 8. If the user selects this option at step 172 (FIG. 3), the user terminal 122 (FIG. 2) determines which upcoming race is the next race available for wagering. The user terminal 122 (FIG. 2) then presents the user with the option of selecting the wager amount for that race at step 214 (FIG. 3). Hot button 185 therefore allows the user to bypass selection steps 196, 204, and 212 (FIG. 3), which the user would otherwise need to pass through. Preferably, any hot button arrangement of the present invention allows the user to bypass one or more selection steps (also called "menu layers"). Hot buttons thus allow quicker movement through various layers of menus than would otherwise be possible (e.g., using a conventional tree-type menu structure without hot buttons).

Further aspects of the present invention are illustrated in connection with wagering system 366, shown in FIG. 29. Many features of wagering system 366 may be provided using an arrangement similar to wagering system 100 (FIG. 1), if desired. Wagering system 366 has a video and data distribution system 368 for distributing racing data racing videos to user terminals 370. The video and data distribution system 368 may be based on any suitable conventional distribution technology, such as satellite transmission, cable television transmission, or television broadcasting. Video and data distribution system 368 receives racing data from racing data interface 372. This signal feed typically has a significantly lower data-rate requirement than live video signals. Accordingly, the racing data transmitted from racing data interface 372 to video and data distribution system 368 may use any of a number of available signal distribution technologies. For example, leased telephone lines may be provided between racing data interface 372 and video and data distribution system 368. Alternatively, racing data may be transmitted by satellite at this stage.

Racing videos, which are received from racing video source 374, preferably use a high-capacity transmission medium such as satellite transmission or cable transmission for at least part of the signal pathway between the point of origination of the video signals and video and data distribution system 368. For example, one suitable source of racing videos is the simulcast transmission of video signals from racetracks. These racing videos can be transmitted by a combination of cable and satellite to a centralized racing video source 374, from which the videos may be transmitted to video and data distribution system 368 via satellite. Alternatively, the racing video may be archived on video tape or another video storage medium, so that the racing video source 374 should include suitable video playback equipment (not shown). Archived racing videos can be played back according to a predetermined schedule, or according to viewer demand.

Regardless of the source of the racing video signals provided at racing video source 374, and regardless of the medium used to transmit these videos from racing video

source 374 to video and data distribution system 368, the racing videos are preferably available for the user to watch at home while the user simultaneously has access to the racing data provided by racing data interface 372. Because real time racing video clips require the full bandwidth of a television channel (although the video could be compressed somewhat using conventional data compression techniques), data and video link 376 between video and data distribution system 368 and user terminals 370 must at least have the capacity of a single television channel. Preferably, the racing videos are distributed over a dedicated racing channel. Racing data may be distributed using any suitable data distribution technique, such as transmission over a sideband or during the vertical blanking interval of the dedicated channel.

Video and data distribution system 368 includes a cable headend facility, satellite facility, or broadcast facility that preferably supplies a full range of conventional television channels to the user in addition to the capability of providing a dedicated racing channel to the user. When the user desires to watch television, the user can tune to one of these channels. The user can tune to a television channel using a user terminal 370 in conjunction with a monitor 378, which is preferably a conventional television set. If user terminal 370 does not contain a tuner capable of tuning to all of the available channels, or if it is desired to bypass the terminal 370 for other reasons, the user can watch television on monitor 378 directly, provided that monitor 378 includes a television tuner.

Thus, a number of alternative approaches can be used to provide racing videos and racing data to the user. However, a common element to all of these approaches is that video and data distribution system 368 be capable of delivering racing video signals from racing video source 374 to user terminals 370 in realtime. The video and data distribution system 368 also delivers racing data to user terminals 370. Thus, wagering system 366 avoids the shortcomings of previously known systems in which no racing videos could be provided to user-controllable terminals and in which limited racing data were at best provided to off-track terminals via telephone lines.

Racing data are provided by a number of sources, including wagering data management system 380. Wagering and data management facility 380 may be a totalisator such as totalisators 382, or may be a stand-alone computer system capable of communicating with totalisators 382. If desired, wagering data management facility 380 may include an accounting capability for managing user accounts.

The type of racing data provided to racing data interface 372 by wagering and data management facility 380 typically includes the current race at each track, which races and tracks are open for wagering, the post times of each race, and the number of races associated with each track. Racing data also include the win, place and show "pool" totals, exacta, trifecta, quinella and other wager payoff predictions, and the actual odds for the current race at each track, as well as the "morning line" odds for any future race. In addition, racing data typically include the number of minutes remaining until post time for the current race at each track.

Racing data provided by wagering data management facility 380 also include race results, such as actual payoff values versus a standard wager amount for win, place, and show wagers. Also provided are actual payoff values for the winning complex wager types, including exacta, trifecta, quinella, pick-n (where "n" is the number of races involved in the pick-n wager), and daily double. Payoff values may also be accompanied by a synopsis of the associated finish list.

In addition, pools, payoffs, and odds may be provided for other wager types, such as omni bets, superfectas, and double-triple bets.

The racing data from wagering data management facility 380 further include program information including the number of runners in each race, valid wager amounts and types accepted by racetracks, scratch lists, distances of each race, and race surfaces. Program information also includes race classification information, the purse, the allowed age range of runners, and the allowed number of wins and or starts for each runner. Racing data from wagering data management facility 380 are delivered to racing data interface 372 via data link 384, which may be any suitable data transmission medium, such as a leased telephone line, cable, satellite, etc.

Racing data interface 372 also receives racing data via supplemental input 386 and manual input 388. The racing data received at inputs 386 and 388 include racing data from third party information sources such as Axcis Pocket Information Network, Inc. of Santa Clara, Calif. Such third party racing data typically include post times, the number of races associated with each track and other information that typically is only provided via a printed racing program. Weather information, such as track conditions, temperature, humidity, dewpoint, and a short status description of the current weather (sunny, raining, foggy, etc.) may also be provided via inputs 386 or 388.

Wagering data management facility 380 preferably includes the capability of either maintaining a user's account or communicating with a user's account located at one of totalisators 382. Totalisators communicate with one another via the well-known Intertote Track System Protocol (ITSP). Racing fans using user terminals 370, communicate with wagering data management facility 380 via communication lines 390, network 392 and transaction data interface 394.

In accordance with one aspect of the present invention, communication lines 390 are telephone lines, network 392 is a telephone network, and transaction data interface 394 is an automated modem system for receiving incoming transaction data from communication devices contained within user terminals 370. Link 396, which provides a communication pathway between transaction data interface 394 and wagering and data management facility 380 may be any suitable type of communication link, for example, 30 RS-232 data lines. Although a telephone link may be used to provide two-way communications for transaction data (wagers placed, account information, etc.), any suitable communication pathway between user terminals 370 and wagering data management facility 380 may be used. For example, transaction data may be relayed to and from user terminals 370 via data and video link 376, video and data distribution system 368, and communication link 398.

In addition to the various elements described above, wagering system 366 may optionally include a subscriber management/customer service facility ("subscriber facility") 400, which is a computer-based facility for coordinating bank transfers and merchandise orders, handling paperwork required by tax and other regulations, and for supplying marketing information to third parties.

User terminals 370 are linked to subscriber facility 400 via communication lines 390, network 392, and communication line 402, which may be, for example, a leased telephone line. Subscriber facility 400 is linked to wagering data management facility 380 via communication line 404. Additional communication links are formed between subscriber facility 400 and racetrack 406, merchandise fulfillment house 408, production facility 410, bank facility 412,

and third parties 414. These links may be formed using any suitable communications medium, such as telephone lines.

Subscriber facility 400 provides wagering system 366 with the capability to implement a variety of marketing and customer service related activities. For example, when the user desires to transfer bank account funds to his wagering account, a transfer authorization can be sent from user terminal 370 to subscriber facility 400 via communication line 402, where, after suitable processing, the transfer request is sent to bank-facility 412. Bank facility 412 may be at the user's bank, or an affiliated bank connected to a banking network capable of authorizing the requested transfer. After bank facility 412 approves the requested transfer of funds, subscriber facility 400 transmits suitable fund transfer instructions to wagering data management facility 380.

Another useful feature that may be implemented using subscriber facility 400 is allowing the user to place merchandise orders from the home. Commercial advertising may be provided with wagering system 366. For example, video advertising clips may be displayed simultaneously with racing videos etc. If a menu option indicates that merchandise, such as racing memorabilia, promotional materials, collectibles, etc. is available, then following step 356 (FIG. 7) the user may interactively place an order for merchandise using wagering system 366. If desired, the user may place merchandise orders against funds located in the wagering account located at wagering data management facility 380 or at the user's account at bank facility 412. Alternatively, the user may place orders using a credit card.

Generally, the information necessary to consummate an on-line purchase of merchandise is well known. This information is collected and disseminated to the appropriate parties by subscriber facility 400. For example, funds verification may be performed by communicating with wagering data management facility 380 or bank facility 412. Merchandise orders may be placed with the racetrack 406 that offered the merchandise, or with merchandise fulfillment house 408.

Subscriber facility 400 may also be used to facilitate monitoring of the usage of user terminals 122. In order to improve the performance of wagering system 366, it may be desirable to determine precisely how various users interact with the various menus etc. that are provided by user terminal 122. User terminals 122 can be programmed to monitor the way in which users interact with the menu structure implemented on user terminals 122. For example, user terminals 122 can monitor how long each user spends at each screen, etc. Periodically, this information may be collected by subscriber facility 400 via communication line 402. This information can be used to improve the performance of the menu structure implemented on user terminals 122, or may be used for marketing purposes (e.g., for direct marketing).

Production facility 410 may be used to satisfy regulatory paperwork requirements for tax and other purposes. In addition, additional or replacement smart cards or user terminals 370 may be ordered from production facility 410.

If desired, a user's personal preferences, such as wagering habits, betting preferences, merchandise orders etc. may be supplied to third parties 414. The user's personal preference data may be transmitted from user terminals 370 to wagering data management facility 380 during the placing of wagers. Later, wagering data management facility 380 transmits the personal preference data to subscriber facility 400, from where the data may be provided to, e.g., third parties 414.

A typical user terminal 370 is shown in FIG. 30. User terminal 370 has display and processing circuitry 416, which receives racing data and realtime video signals including videos from racing video source 374 via video input 418. The user enters commands with user input interface 420, which may be any suitable input interface, such as a remote control, keyboard, a conventional voice-actuated controller system, etc. Display and processing circuitry 416, which is preferably microprocessor-based, coordinates the display of the racing data and videos on monitor 378 and the recording of videos on video recorder 424. User terminal 370 also has transaction data communication circuitry 422 (e.g., modem circuitry) for communicating transaction data to wagering data management facility 380 (FIG. 29) and subscriber facility 400 (FIG. 29).

As is well known, set-top converters, video cassette recorders, audio/video receivers, and other audio/video equipment may be interconnected in a variety of ways. For example, some audio/video components receive a full range of television channels on a radio frequency (RF) input line, and output a selected channel or other video signal on an RF channel such as channel 2, 3, or 4. An output provided on an RF channel must be processed by a television tuner tuned to that channel. Accordingly, this type of arrangement is suitable for audio/video equipment that is connected to an audio/video component having a television tuner (e.g., a conventional television set). Some audio/video equipment provides direct video and audio signal outputs, which may be received by a monitor or other audio/video component that does not have a television tuner.

In accordance with the present invention, the racing videos and data received via input 418 are typically received along with a complete range of television channels. In one suitable arrangement, the racing videos are provided on one or more dedicated channels and the racing data can be provided in an available region of bandwidth within these channels (e.g., on a frequency modulated sideband). If the racing videos and data are provided over a digital video channel (e.g., as used with certain television satellite systems), the video signals occupy one portion of the digital signal and the racing data another. Display and processing circuitry 416 contains circuitry for separating out the racing data from the video signals. Racing data are processed by display and processing circuitry 416 so that various menus of options and data may be displayed. Racing videos and the menu displays can be provided to monitor 378 via RF output 426 or video and audio output 428.

Because cable channels are often scrambled, display and processing circuitry 416 may also contain suitable circuitry for descrambling the cable (or satellite) television channels to which the user subscribes. Alternatively, the user may attach a conventional set-top cable converter unit to their television, for use in conjunction with user terminal 370.

Further, various different connections are possible with video recorder 424. If video recorder 424 is a conventional video cassette recorder, video output 430 may be an RF output or a video and audio output. If video recorder 424 only contains recording components and not a television tuner, then an RF output would not be suitable. In that case, video output 430 is preferably a video/audio output rather than an RF output.

Commands from display and processing circuitry 416 are provided to video recorder 424 over communication path 432. Communication path 432 may be a direct electrical connection to video recorder 424 or may use an infrared output circuit coupled to the infrared input of video recorder

424. If desired, video recorder 424 may be provided with the capability of providing as an output video recorder status data regarding the state of video recorder 424 (e.g., tape inserted, play/record confirmed, index data on tape read/confirmed, etc.). The video recorder status data may be provided to display and processing circuitry 416 over communication path 432. Video recorder 424 may also be provided with a dedicated set-top converter box (such as shown connected to monitor 378 in FIG. 30). The set-top converter box may be provided downstream from the other components of user terminal 370 or may be provided as a completely separate input.

In the illustrative example shown in FIG. 30, set-top box 434 is provided midway between display and processing circuitry 416 and monitor 378. With this arrangement, line 436 is preferably an RF line. Another way in which television signals may be provided to monitor 378 is to provide additional RF or video/audio input 440 to monitor 378. If desired, descrambling on this line may be performed by set-top box 442. Switching between the desired audio/video and RF inputs to monitor 378 may be performed by circuitry within monitor 378, if desired.

If an audio/video receiver is also connected to the user's home system, further options are available. For example, the audio/video receiver (not shown) may be used to switch the various audio and video signals shown in FIG. 30. RF video signals may be switched using suitable RF switching equipment.

Thus, there are numerous suitable ways in which to arrange and interconnect various home audio/video components and user terminal 370. The particular arrangement chosen for user terminal 370 is not limited to any one setup. For example, monitor 378 may be a conventional television with an integral television tuner or may be any other suitable display monitor. Video recorder 424 may be a conventional video cassette recorder or may contain a status data output in addition to the components necessary to perform video recording and playback. One or more set-top boxes 442 or 434 may be provided. An audio/video receiver or RF signal switching and splitting circuitry may be connected to user terminal 370. Any of these components may be provided as a separate audio/video component or may be made integral with user terminal 370.

Wagering system 366 (FIG. 29) may be used to provide a variety of interactive wagering features. In accordance with one aspect of the present invention, when the user invokes wagering system 366 (e.g., by entering an appropriate command via user input interface 420 (FIG. 30), the user is presented with an initial racetrack selection menu at step 444, as shown in FIG. 31. A suitable format for the racetrack selection menu is a list highlighted to show the current selection. Another suitable format for the racetrack selection menu is map menu 446, shown in FIG. 35. With this approach, the various available racetracks are displayed on a map, e.g., of the United States. The currently selected racetrack (Hollywood park in FIG. 35) is highlighted. Preferably, the user can select a racetrack using cursor keys to move up/down and right/left until the highlighted portion is positioned on the desired racetrack. The user may then press enter to select that track. As shown in FIG. 35, map menu 446 preferably has go back button 447. If the user selects go back button 447, the user is returned to the previous menu. In addition to serving as a menu for track selections, a format similar to that of map menu 446 may be used to allow the user to make other selections, such as when choosing a region of the country from which racing or other information (e.g., commercial advertising) is desired. Map

menu 446 may be highlighted using any suitable technique, e.g., using an icon.

After a racetrack has been selected at step 444 of FIG. 31, the user decides whether to select a wager amount or make a menu choice at step 448. The term "menu choice" used in connection with FIGS. 31-34 includes: "other track," "other race," "information," and "account." In accordance with the present invention, menu choices other track 450, other race 452, information 454, and account 456 are displayed on a screen 458 of mixed text and video, as shown in FIG. 36. Preferably, menu options appear at the bottom of screen 458. The currently selected racetrack 460 (Churchill Downs), race no. 462 (race 2) and time until post 464 (nine minutes) appear in a banner 466 at the top of screen 458. The default for the currently selected race is the next race scheduled to be run at the selected racetrack. Current odds or other useful racing information items appear in box 468.

In addition, a realtime racing video 470 is simultaneously displayed in box 472. Preferably, racing video 470 is a simulcast from the selected racetrack corresponding to the next scheduled race. Typically, race previews are shown prior to each race. These previews may contain views of the racetrack, fans, and runners, interviews with jockeys and trainers, and commentary. At post time, the video of the race itself is shown. If no racing videos are available at the selected track, box 472 can contain a video clip of races at other tracks or can contain advertising information, etc.

The arrangement of screen 458 allows the user to gauge how much time is left to place a wager by viewing the time until post 464, and viewing racing video 470. Current odds may be readily reviewed at box 468. With screen 458, the user can watch racing previews and race videos in realtime, while wagering on races interactively.

In step 448 of FIG. 31, the user selects a bet amount by moving highlighted portion 474 (FIG. 36) to the desired dollar amount (\$5 in FIG. 36). With any screen such as screen 458 (FIG. 36), the user can make a desired selection using input interface 420 (FIG. 30). For example, if user input interface 420 (FIG. 30) includes an infrared remote control and receiver, the user can press a "select" or "enter" key on the remote control to make a selection.

After selecting a bet amount at step 448 of FIG. 31, the user is passed to step 476, in which a bet type or a menu choice is selected. The bet type can be selected using a screen such as screen 478 in FIG. 37. As shown in FIG. 37, many of the display features of screen 458 (FIG. 36) remain unchanged as the user moves from step 448 (FIG. 31) to step 476 (FIG. 31). For example, banner 456 is unaffected, as are menu choices other track 450, other race 452, information 454, and account 456. Box 468 (which contains odds) and box 472 (which contains racing video 470) are also unchanged from step 448 (FIG. 31) to step 476 (FIG. 31). An advantage of providing screens that do not change excessively from step to step is that the user is less likely to be confused, and can find menu options more readily with this approach.

The user selects a bet type such as a win bet by moving highlighted portion 480 to the win bet and selecting it, e.g., by entering the appropriate command with user input interface 420 (FIG. 30).

After selecting the bet type at step 476 of FIG. 31, the user is presented with a runner selection menu at step 482. A suitable screen format for the runner menu is given by screen 484 in FIG. 38. Having selected the number of runners either required or allowed for the selected bet type, the system proceeds to step 486, at which the user is presented with the

menu options place wager 488, another amount 490, and cancel 492 in addition to the menu choices 450, 452, 454, and 456 listed at the bottom of screen 494 in FIG. 39. Also displayed on screen 494 are wager number 496, wager amount 498, bet type 500 for the wager selected in steps 448, 476, and 482.

If the option place wager 488 is selected, wager transaction data corresponding to the selected wager is transmitted from user terminal 370 (FIG. 29) to wagering data management facility 380 (FIG. 29) at step 510 (FIG. 31).

Following a brief screen in which the user is alerted that the wagering transaction is being sent (e.g., with the message "sending wager"), a confirmatory message, such as message 504 is displayed on screen 506, as shown in FIG. 40. Preferably, as the simulcast of the selected race approaches post time, the screen format assumes the larger, nearly full-screen size of screen 506. The racing video is shown in the central portion of screen 506. A relatively small portion 508 of the screen 506 is used to display the selected bet amount, bet type, and runner(s).

If the user selects another amount 490 (FIG. 39) at step 486 of FIG. 31, then the user can select a new bet amount at step 512 (using a menu such as screen 458 of FIG. 36). Selecting cancel 492 (FIG. 39) returns the user to step 448.

The results of selecting one of the "menu choices" (other track, other race, information, or account) from step 448, 476, 482, or 486, are shown in FIG. 32. If "other track" is selected at step 514, then the user is presented with the menu choices "track" and "menu choice" at step 516. A suitable menu format for selecting a new track is a format such as used for screen 518 in FIG. 41. If a "menu choice" is made, the user returns to step 514.

If "account" is selected by the user at step 514, the user is presented with a menu such as screen 520 of FIG. 42, which prompts the user to enter his personal identification code. The user enters the personal identification code at step 522 (FIG. 32) with user input interface 420 (FIG. 30). During the process of entering the personal identification code, boxes 521 change color to indicate when each code element (e.g. digit) is entered. After the personal identification code has been entered, screen 524 is displayed, as shown in FIG. 43. In screen 524, the user's account balance 526 is shown (as obtained, e.g., from the wagering data management facility 380 of FIG. 29). Also displayed is a menu of fund transfer amounts 528. At step 530 (FIG. 32) the user selects the desired amount of funds to transfer from bank facility 412 (FIG. 29) to his account at wagering data management facility 380 (FIG. 29) by highlighting menu option transfer funds 532 (FIG. 43). Following this selection, a confirmatory message, such as "bank transfer" is displayed. Account balance 526 is updated to reflect the new balance, once the transfer is complete.

If the menu option "information" is selected at step 514 in FIG. 32, the user is given the opportunity to select from the menu options "racing information," "other," and "menu choice" at step 534. If "racing information" is selected, then the user is presented with a list of menu options at step 536. A suitable menu format for displaying the step 536 menu options is screen 538 (FIG. 44), which allows the user to highlight the desired menu option. Four options are listed in the information category portion of screen 538 (FIG. 44). To see additional listings, the user cursors down or up to scroll or page through the listing.

If the option "late changes/overweights" is selected at step 536 of FIG. 32, then a list of late changes and overweights is displayed at step 538. Scratches are displayed at step 540,



when "scratches" is the selected menu option. At step 542, weather information is displayed when that option is selected at step 536. Racing highlights are displayed at step 544 if "highlights" is selected at step 536. Odds are displayed at step 546 if the menu option selected at step 536 is "odds." In addition, scratches are preferably noted on the screens that contain runner numbers (e.g., by the notation "scratch" adjacent to the appropriate runner number). Odds may be displayed using the traditional fractional format (e.g., 9/5) or may be displayed using a percentile format (e.g., 5.0%), as shown in FIG. 45.

Another category of racing information that may be viewed is handicapping information. To view handicapping information, the user selects "handicapping" at step 536. Making the selection "handicapping" moves the user to step 548 in FIG. 33, at which the user chooses between viewing handicapping data and creating a personal power rating. If the user selects "view handicapping data," various handicapping data screens are displayed, showing, for example, snapshot power ratings, speed/class ratings, pace ratings, and jockey/trainer information at step 550.

If "personal power rating" is selected at step 548 (FIG. 33), the user is presented with an opportunity to create his own personal power rating, by entering weights for various handicapping categories. As shown in FIG. 46, a menu of options is preferably displayed using a screen format such as used for screen 552. Handicapping categories include, but are not limited to, speed 554, breeding 556, in-the-money 558, and track condition 560. The current odds (e.g., the win odds) for each runner may also be included as a handicapping category, if desired. Weights are entered by moving a highlighted portion of screen 552 to the desired weight and selecting the highlighted weight with user input interface 420 (FIG. 30). The desired weight for the speed category is selected at step 562 (FIG. 33). The weights for breeding, in-the-money and track condition are entered at steps 564, 566, and 568 (FIG. 33), respectively. The weights chosen on screen 552 of FIG. 46 are: speed 4, breeding 2, in-the-money 5, and track condition 3.

After all weights have been entered, the personal power ratings are displayed at step 570 (FIG. 33). Any suitable display format may be used to display the ratings. For example, the ratings may be displayed numerically, using a bar graph, a pie chart or other graphical display. As shown in FIG. 47, one suitable display is horizontal graph 572. Runners are listed numerically on the left side of graph 572. The corresponding results of the personal power rating selections made in steps 562, 564, 566, and 568 (FIG. 33) are shown numerically on the right side of graph 572. Also shown—in the center of graph 572—are runner icons 574, each horizontally located at a distance from the left edge of graph 572 that is representative of the numerical personal power rating result. After the personal power ratings are displayed at step 570, the system returns to step 548 (when instructed by the user).

User terminal 370 (FIG. 30) performs the calculations necessary to determine the personal power ratings based on the racing data received from racing data interface 372 (FIG. 29) and the selected personal power rating weights. Any suitable method of calculating the power ratings may be used, such as multiplying the weights by a numerical value representative of the runner's strength in the respective categories. For example, in the speed category, the weight of 4 selected in FIG. 46 could be multiplied by the runner's percentile ranking in average speed in its most recent races. Alternatively, a predetermined speed power rating could be used. Although screen 552 (FIG. 46) depicts four personal

power rating categories, any number of categories may be used, limited only by the amount of statistical racing data available from racing data interface 372 (FIG. 29).

Returning to FIG. 32, if the menu option "other" is selected at step 534, then the user is presented with menu options "racing simulcast schedule," "miscellaneous advertising," "help," and "questionnaire" at step 576. A schedule of which races are being video-simulcast is displayed if "racing simulcast schedule" is selected. Preferably, a user can select from the displayed list of simulcast races. When a particular race is selected from those displayed at step 576, user terminal 122 (FIG. 29) returns the user to step 448 at FIG. 31, where the user is provided with an opportunity to place a wager on the selected race.

If "miscellaneous advertising" is selected at step 576, advertising information is displayed. Help information is displayed if "help" is selected. Because user terminal 370 (FIG. 30) is capable of handling video signals, the advertising information that is provided at step 576 can contain video clips in addition to text information. For example, racing data interface 372 (FIG. 29), racing video source 374 (FIG. 29) or other suitable advertising source may transmit compressed video clips to user terminal 370 of FIG. 30, where they are stored on local mass storage device 578 (FIG. 3) (e.g., a hard disk drive). When advertising, help, or any other information is selected that would benefit from a video presentation, the compressed video signal stored on local mass storage device 578 (FIG. 30) is played back using display and processing circuitry 416 (FIG. 30).

Another menu option that may be selected at step 576 (FIG. 32) is "questionnaire." When this selection is made, user terminals 122 provide an interactive questionnaire on the monitor 378, to which the user may respond, if interested. A typical use for such questionnaires would be to facilitate user feedback. For example, questionnaires may be provided that ask the user which particular services of wagering system 366 (FIG. 1) are of greatest interest, etc. When the questionnaire is completed, the results of the questionnaires may be transmitted to subscriber facility 400 (FIG. 29) using transaction data communications circuitry 422 (FIG. 30.) and communication line 402 (FIG. 29).

As described above, a "menu choice" option at step 514 (FIG. 32) is "other track." The selection of another racetrack is illustrated in FIG. 48, in which the racetrack Hollywood Park has been selected. When a new racetrack is selected, the previously selected racetrack 460 (e.g., Churchill Downs in FIG. 36) is replaced with the currently selected racetrack 580. In addition, the currently selected race 582 is automatically updated to reflect the next currently scheduled race to be run at the currently selected racetrack. As shown in FIG. 48, the next race scheduled at Hollywood Park is race 3. The time until post 584 is also automatically updated upon entering the screen 586 to correspond to the next currently scheduled race. Also automatically updated are odds 590 and racing video 592.

If it is desired to change to another race from a screen such as screen 586, which displays the menu choices "other track," "other race," "information," and "account," the user highlights portion 594 of screen 586 corresponding to menu option "other race" at step 514 (FIG. 32). Selecting "other race" at step 514 (FIG. 32) takes the user to step 596 in FIG. 34. A suitable screen for displaying the menu options available at step 596 is screen 598, shown in FIG. 49.

As shown in FIG. 49, a number of viewing options are presented for each race, such as "results," "alert," and "tape/VCR." For races that have been run, the appropriate

option is "results," which allows a user to watch an earlier race. If the user selects "results" at step 596 of FIG. 34, the user is presented with the menu option "watch the race" at step 600. A suitable screen for presenting this option to the user is screen 602 of FIG. 50. If the user decides to watch the race and makes the menu selection "watch the race" at step 600 (FIG. 34), a video of the race is displayed at step 602 (FIG. 34) and, if desired, the user may be billed a transaction fee for making this selection. Transaction fees may be levied using any suitable technique. For example, user terminal 370 can maintain a running log of transaction fees charged the user for making selections such as "watch the race," etc. Periodically, this log may be transferred to subscriber facility 400, which compiles a bill for the user, or which debits the user's account (at bank 412 or wagering data management facility 380). The user may also be charged transaction fees for each wager placed at wagering data management facility 380. This type of transaction fee is preferably levied at the time at which the wager is placed, e.g., by debiting the user's account (at wagering data management facility 380 or bank 412) by the transaction fee in addition to the wager amount.

In order to allow the user to watch the results of previously run races, video clips of the races must be stored in a suitable facility and delivered to the user on demand. A variety of arrangements for accomplishing this task are possible. For example, as shown in FIG. 29, a user may place an order for a race video from user terminal 370 via communication line 390. The order is received by transaction data interface 394, which transmits the order and any necessary account verification information to wagering data management system 380. Race video order information can be transmitted to video and data distribution system 368 from wagering data management facility 380 via communication link 398. If it is desired to impose a charge for ordering videos of race results, wagering data management system 380 can debit the user's account accordingly when the order is received.

Video and data distribution system 368 can contain a high capacity storage medium, suitable for recording races as they are received from racing video source 374. In order to minimize the amount of storage necessary in video and data distribution system, it may be desired to record only the video of the race, and not any race previews. It may also be desired to digitally compress the videos.

Various approaches may be used for delivering the race videos that are stored at video and data distribution system 368 to user terminal 370. For example, the sideband or other portion of the bandwidth used by the wagering system 366 to deliver racing data to user terminals 370 may be sufficiently large to support the delivery of compressed video clips in addition to the racing data. If a compressed video clip contains encoded information, only authorized users who selected to watch the race results video will receive that video clip. A similar approach is to send the requested video information over an available video channel to authorized users. A pay-per-view cable channel is also a suitable pathway for providing racing videos to user terminal 370.

Regardless of how user terminal 370 receives the requested prerecorded race video clip, at step 602 (FIG. 34), user terminal 370 displays the video on monitor 378. If necessary, user terminal 370 decompresses any compressed video information.

Different options are available for races that have not yet been run. For example, the user can select "alert" at step 596 (FIG. 34) to be alerted (e.g., by an audible tone and/or a

visual prompt on the display screen) that the race is about to be run. If alert is selected at step 596 (FIG. 34), user terminal 370 (FIG. 30) triggers an alarm and displays the race video when appropriate at step 604 (FIG. 34). The user can also select "tape/VCR" at step 596 (FIG. 34). If "tape/VCR" is selected at step 596 (FIG. 34), at step 606 (FIG. 34) user terminal 370 (FIG. 30) programs video recorder 424 (FIG. 30) with the appropriate recording information or actuates video recorder 424 (FIG. 30) at the time of the selected race. Thus, selecting "tape/VCR" allows the selected race to be recorded. When desired, the user can review the race videos recorded by video recorder 424 (FIG. 30). If video recorder 424 (FIG. 30) is capable of transmitting data such as indexing data to user terminal 370 (FIG. 30), user terminal 370 (FIG. 30) can coordinate the playback of race videos.

Any suitable display can be used to present the user with the menu options of step 596 (FIG. 34). In the example of screen 598, the options available for each race appear in bold type, whereas unavailable options appear only faintly. For example, race 1 and race 2 have already been run. Accordingly, results 608 and 610 appear in bold type. Races 3 and 4 have not yet been run so alerts 612 and 614 and tape/VCR 616 and 618 appear in bold.

One skilled in the art will appreciate that the present invention may be practiced by other than the described embodiments, which are presented for purposes of illustration and not of limitation, and the present invention is limited only by the claims that follow.

What is claimed is:

1. A method of using an off-track wagering system to interactively wager on races, comprising:

providing a user with an opportunity to place a wager on a given race that has not been run using a user terminal, wherein the given race is subsequently recorded to create a race video clip;

providing the user with an opportunity to request the race video clip with the user terminal;

displaying the requested race video clip on a monitor connected to the user terminal in response to a request for that race video clip by the user.

2. The method of claim 1 further comprising recording the race video clips with a video and data distribution system.

3. The method of claim 2 further comprising sending requests for race video clips to the video and data distribution system.

4. The method of claim 1 further comprising:

presenting the user with an opportunity to view videos of live races in real time or prerecorded race video clips; and

displaying videos of live races on the monitor in real time when requested by the user.

5. The method of claim 4 further comprising using the user terminal to set a video recorder to record a preselected race.

6. The method of claim 1 further comprising displaying racing data corresponding to the displayed race video clip on the monitor connected to the user terminal.

7. The method of claim 6 further comprising:

using a cable headend facility to provide racing data corresponding to the displayed video clip to the user terminal.

8. The method of claim 7 further comprising displaying the racing data on the monitor with the displayed racing video clip.

9. The method of claim 8 further comprising displaying advertising with the racing video clip and racing data.



10. The method of claim 7 further comprising transmitting the racing data to the user terminal on a sideband.

11. The method of claim 1 further comprising transmitting and receiving transaction data related to the wager over a telephone network.

12. The method of claim 1 further comprising levying a transaction fee when the user requests the race video clip.

13. The method of claim 1 further comprising using a cable headend facility to provide the racing video clips to the user terminal.

14. The method of claim 1 further comprising using as the monitor a television set having a tuner for tuning to a desired television channel.

15. The method of claim 1 further comprising presenting advertising on the monitor.

16. The method of claim 1 further comprising receiving the wager data with a totalisator.

17. The method of claim 1 further comprising levying a transaction fee when the user places the wager.

18. The method of claim 1 further comprising using the user terminal to set a video recorder to record a preselected race.

19. An off-track wagering system for interactively wagering on races comprising:

means for providing a user with an opportunity to place a wager on a given race that has not been run using a user terminal, wherein the given race is subsequently recorded to create a race video clip;

means for providing the user with an opportunity to request the race video clip with the user terminal; and  
means for displaying the requested race video clip on a monitor connected to the user terminal in response to a request for that race video clip by the user.

20. The system of claim 19 further comprising means for recording the race video clips with a video and data distribution system.

21. The system of claim 20 further comprising means for sending requests for race video clips to the video and data distribution system.

22. The system of claim 20 further comprising:

means for presenting the user with an opportunity to view videos of live races in real time or prerecorded racing video clips; and

means for displaying videos of live races on the monitor in real time when requested by the user.

23. The system of claim 22 further comprising means for using the user terminal to set a video recorder to record a preselected race.

24. The system of claim 20 further comprising means for displaying racing data corresponding to the displayed race video clip on the monitor connected to the user terminal.

25. The system of claim 24 further comprising:

means for receiving the racing data with a cable headend facility; and

means for providing the racing data from the cable headend facility to the user terminal.

26. The system of claim 25 further comprising means for displaying the racing data on the monitor with the displayed race video clip.

27. The system of claim 26 further comprising means for displaying advertising with the race video clip and racing data.

28. The system of claim 25 further comprising means for transmitting the racing data to the user terminal on a sideband.

29. The system of claim 19 further comprising means for transmitting and receiving transaction data related to the wager over a telephone network.

30. The system of claim 19 further comprising means for levying a transaction fee when the user requests the race video clip.

31. The system of claim 19 further comprising means for providing the race video clip to the user terminal with a cable headend facility.

32. The system of claim 19 further comprising means for using as the monitor a television set having a tuner for tuning to a desired television channel.

33. The system of claim 19 further comprising means for presenting advertising on the monitor.

34. The system of claim 19 further comprising means for receiving the wager data with a totalisator.

35. The system of claim 19 further comprising means for levying a transaction fee when the user places the wager.

36. The system of claim 19 further comprising means for using the user terminal to set a video recorder to record a preselected race.

37. An off-track wagering system for interactively wagering on races, comprising:

a user terminal configured to provide a user with an opportunity to place a wager on a given race that has not been run, wherein the given race is subsequently recorded to create a race video clip and wherein the user terminal is further configured to provide the user with an opportunity to request the race video clip;

a video and data distribution facility configured to allow the requested race video clip to be provided to the user terminal in response to a request for that race video clip by the user; and

a monitor on which the requested race video clip is displayed.

38. The system of claim 37 further comprising a communication line to send requests for racing video clips to the video and data distribution facility.

39. The system of claim 37 wherein the video and data distribution facility is further configured to allow videos of live races to be provided in real time to the user terminal when requested by the user and wherein the user terminal is further configured to:

present the user with an opportunity to view videos of live races in real time or prerecorded racing video clips; and display on a monitor the requested videos of live races.

40. The system of claim 39 further comprising a video recorder that is set by the user terminal to record a race.

41. The system of claim 37 wherein the video and data distribution facility is further configured to allow racing data corresponding to the race video clip displayed on the monitor to be provided to the user terminal.

42. The system of claim 41 wherein the video and data distribution system includes a cable headend facility, the system further comprising a video and data link, wherein the cable headend facility is configured to allow the racing data to be provided to the user terminal using the video and data link.

43. The system of claim 42 wherein the user terminal is configured to display the racing data on the monitor with the displayed race video clip.

44. The system of claim 43 wherein the user terminal is configured to display advertising with the race video clip and racing data on the monitor.

45. The system of claim 42 wherein the cable headend facility is configured to transmit the racing data to the user terminal on a sideband.

46. The system of claim 37 further comprising a telephone network for transmitting and receiving transaction data related to the wager.

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47. The system of claim 37 wherein the user terminal is configured to levy a transaction fee when the user requests the race video clip.

48. The system of claim 37 wherein the video and data distribution facility includes a cable headend facility and wherein the cable headend facility is configured to allow the race video clip to be provided to the user terminal.

49. The system of claim 37 wherein the monitor comprises a television set having a tuner for tuning to a desired television channel.

50. The system of claim 37 wherein the user terminal is configured to provide advertising on the monitor.

51. The system of claim 37 further comprising a totalisator for receiving the wager data.

52. The system of claim 37 wherein the user terminal is configured to levy a transaction fee when the user places the wager.

53. The system of claim 37 wherein the user terminal is further configured to set a video recorder to record a race.

54. The method of claim 1 further comprising transmitting and receiving transaction data related to the wager over a cable connected to the user terminal.

55. The system of claim 19 further comprising means for transmitting and receiving transaction data related to the wager over a cable connected to the user terminal.

56. The system of claim 37 further comprising a cable connected to the user terminal over which transaction data related to the wager is transmitted and received.

57. An off-track wagering system for interactively wagering on races that are recorded to create race video clips, comprising:

a user terminal programmed to provide a user with an opportunity to place a wager on a given race that has not been run, wherein the given race is subsequently recorded to create a video clip and wherein the user terminal is further programmed to provide the user with an opportunity to request the race video clip;

a video and data distribution facility including a cable headend facility that is configured to allow the requested race video clip to be provided to the user terminal in response to a request for that race video clip by the user; and

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a monitor connected to the user terminal on which the requested race video clip is displayed.

58. An off-track wagering system for interactively wagering on races that are recorded to create race video clips that are delivered to a user for viewing, comprising:

a user terminal configured to provide the user with an opportunity to place a wager on a given race that has not been run, wherein the given race is subsequently recorded to create a race video clip and wherein the user terminal is further configured to provide the user with an opportunity to request the race video clip; and a monitor connected to the user terminal on which the requested race video clip is displayed.

59. A method for interactive wagering on races using an off-track user terminal, comprising:

allowing a user at a user terminal that is connected to a cable headend facility by a cable path to use the cable path when accessing racing data from a wagering facility on races that have not been run and for which wagers may be placed;

displaying information on available tracks on which wagers may be placed to the user on a monitor connected to the user terminal;

displaying information on available races that have not yet been run to the user on the monitor connected to the user terminal;

allowing the user to use the user terminal connected to the cable headend facility to select a desired track for placing a wager;

allowing the user to use the user terminal connected to the cable headend facility to select a desired race that has not been run for placing the wager; and

allowing the user to use the user terminal connected to the cable headend facility to place the wager on the selected race that has not been run at the selected track by transmitting wager data to a wagering facility at least partially using the cable path connected to the cable headend facility.

\* \* \* \* \*

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 6,004,211  
DATED : December 21, 1999  
INVENTOR(S) : Mark A. Brenner et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 1,

Line 37, change "twoway" to -- two-way --;

Column 2,

Line 3, change "'twin'" to -- "win" --;

Column 11,

Line 45, change "additional tem" to -- additional item --;

Column 21,


Line 2, change "Circuitry" to -- circuitry --;

Line 43, change "Processed" to -- processed --.

Signed and Sealed this

Sixteenth Day of July, 2002

*Attest:*

A handwritten signature in black ink, appearing to read "James E. Rogan", with a horizontal line drawn underneath it.

*Attesting Officer*

JAMES E. ROGAN  
*Director of the United States Patent and Trademark Office*



EVIDENCE APPENDIX D

CONFIDENTIAL LAPPINGTON ET AL. U.S. PATENT NO. 5,734,413



US005734413A

**United States Patent** [19]

Lappington et al.

[11] Patent Number: **5,734,413**[45] Date of Patent: **Mar. 31, 1998****[54] TRANSACTION BASED INTERACTIVE TELEVISION SYSTEM**

[75] Inventors: **John P. Lappington**, Lawrenceville, Ga.; **Susan K. Marshall**, Greenwood Village; **Wayne Y. Yamamoto**, Aurora, both of Colo.; **Cameron A. Wilson**, Marietta, Ga.

[73] Assignee: **Thomson Multimedia S.A.**, Paris, France

[21] Appl. No.: **159,930**

[22] Filed: **Nov. 30, 1993**

**Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 796,085, Nov. 20, 1991, Pat. No. 5,343,239.

[51] Int. Cl.<sup>6</sup> ..... **H04N 7/00**

[52] U.S. Cl. .... **348/12; 348/13; 463/40; 364/10**

[58] Field of Search ..... **348/13, 12, 6, 348/7, 10, 11; 455/4.1, 4.2, 5.1, 6.1, 6.2; 364/410, 411, 412; 273/439, 433, 434, 429, 430, 431; 463/25, 31, 39, 40, 42, 9, 43**

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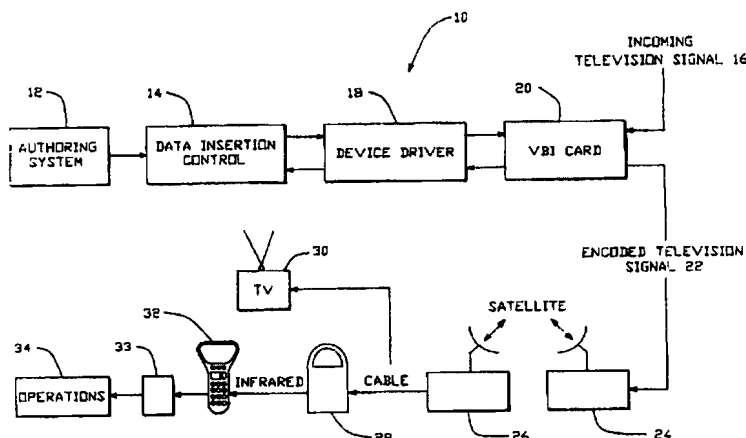
Primary Examiner—David E. Harvey

Attorney, Agent, or Firm—Jeffrey D. Carter

[57]

**ABSTRACT**

An interactive television system where interactive information is inserted in the vertical blanking interval of a standard television signal or some other appropriate medium. The signal is received and decoded by a settop device which sends the decoder signal, via an infrared signal, to a handheld device. The system includes an interactive program authoring system, and programmer tables in the memory of the handheld device which store data for the various interactive events. This system allows a viewer to enter and exit events at any time without having to wait for information to be downloaded and without losing scores. Furthermore, this system allows many interactive programs to run concurrently over extended periods of time while maintaining cumulative scores in the handheld for each interactive program or series of programs.

**141 Claims, 18 Drawing Sheets**

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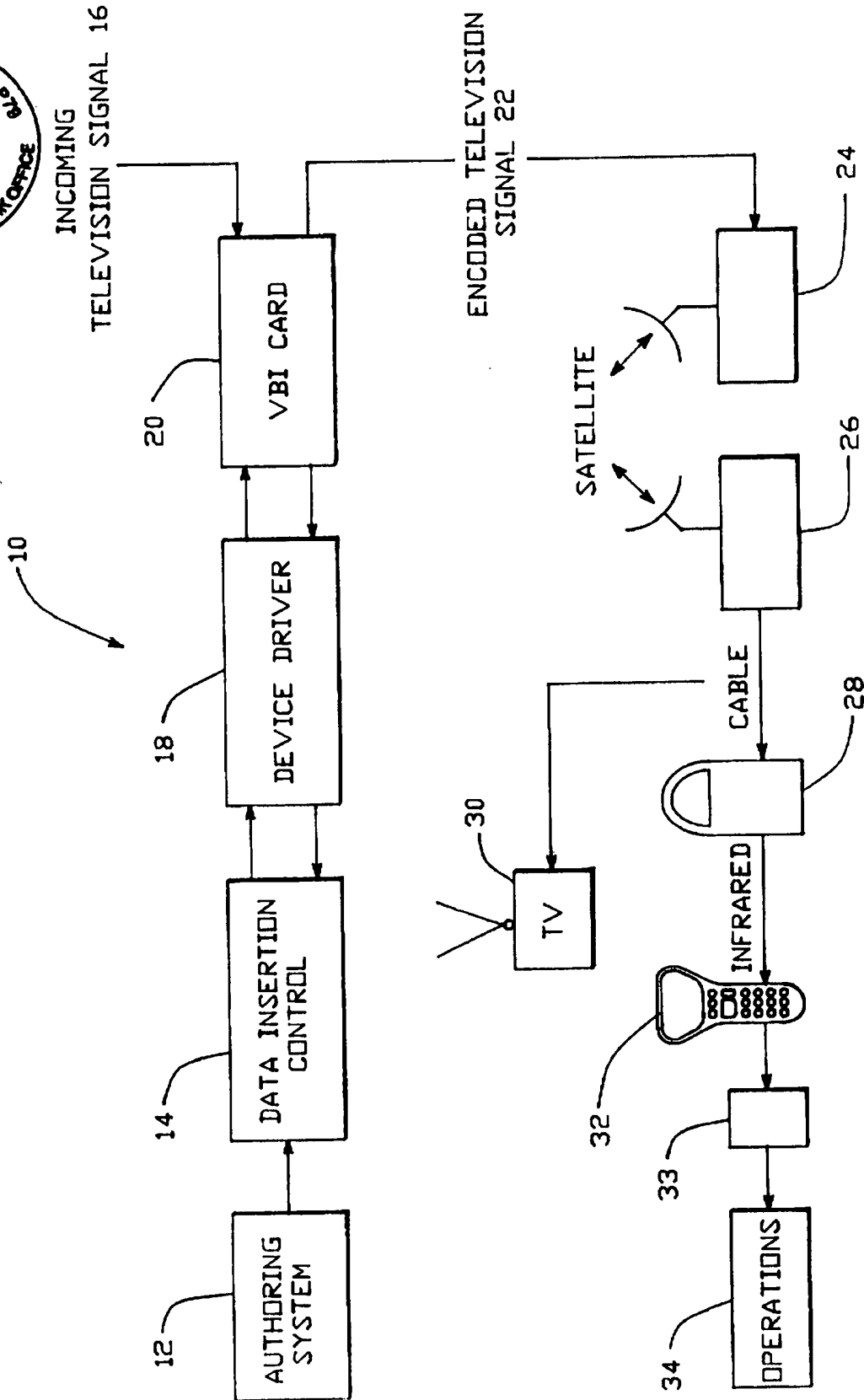


FIG. -1

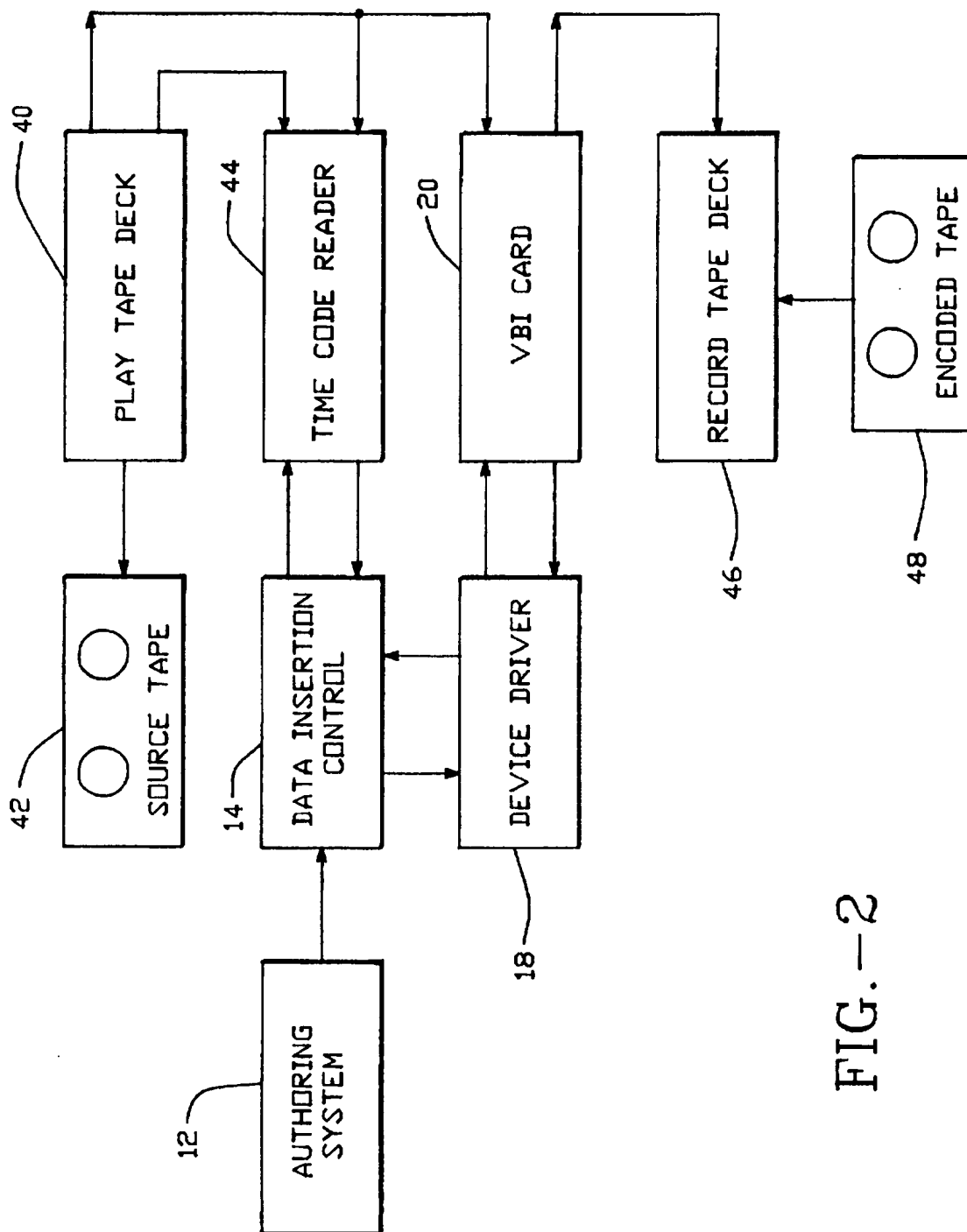


FIG.-2



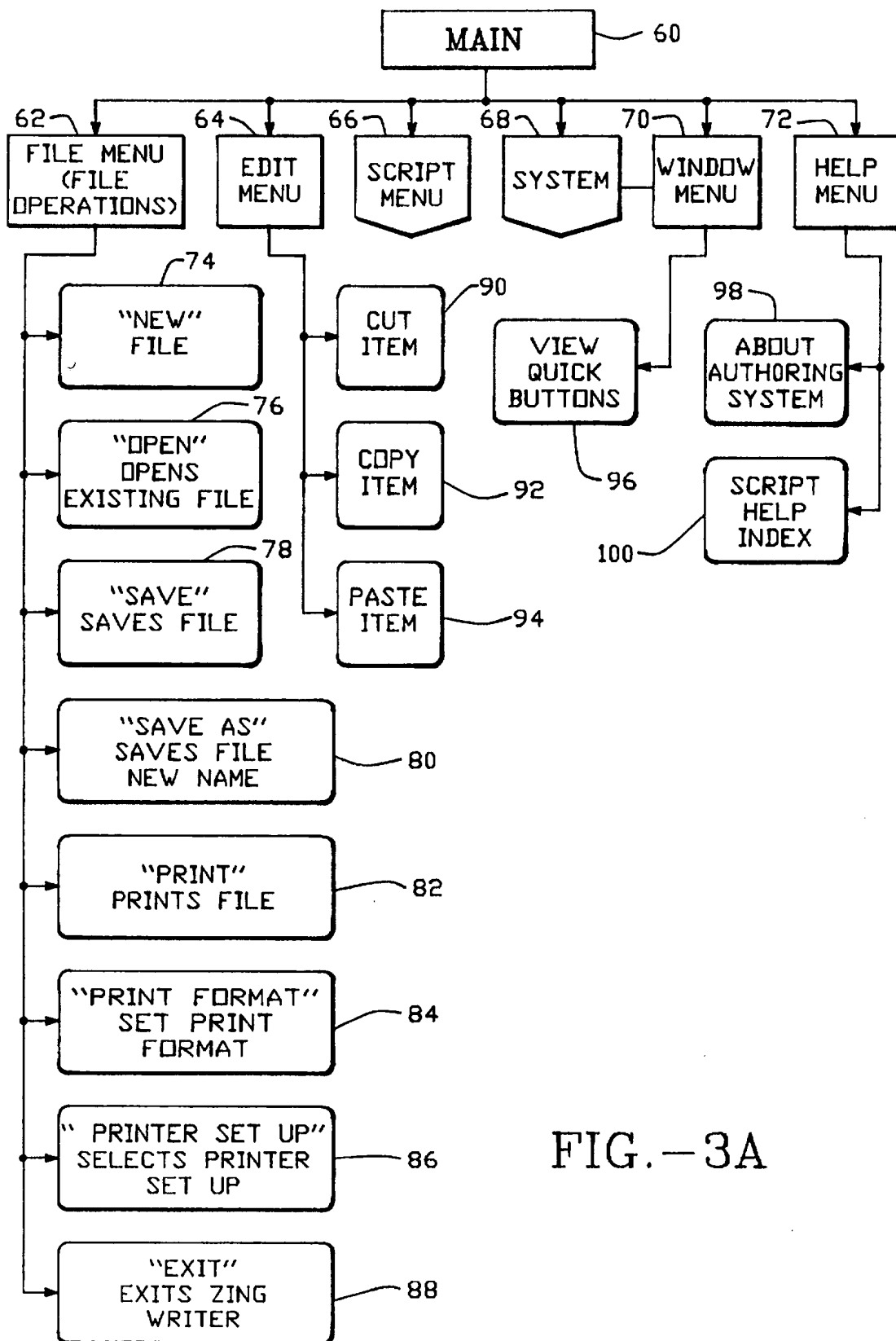


FIG.-3A

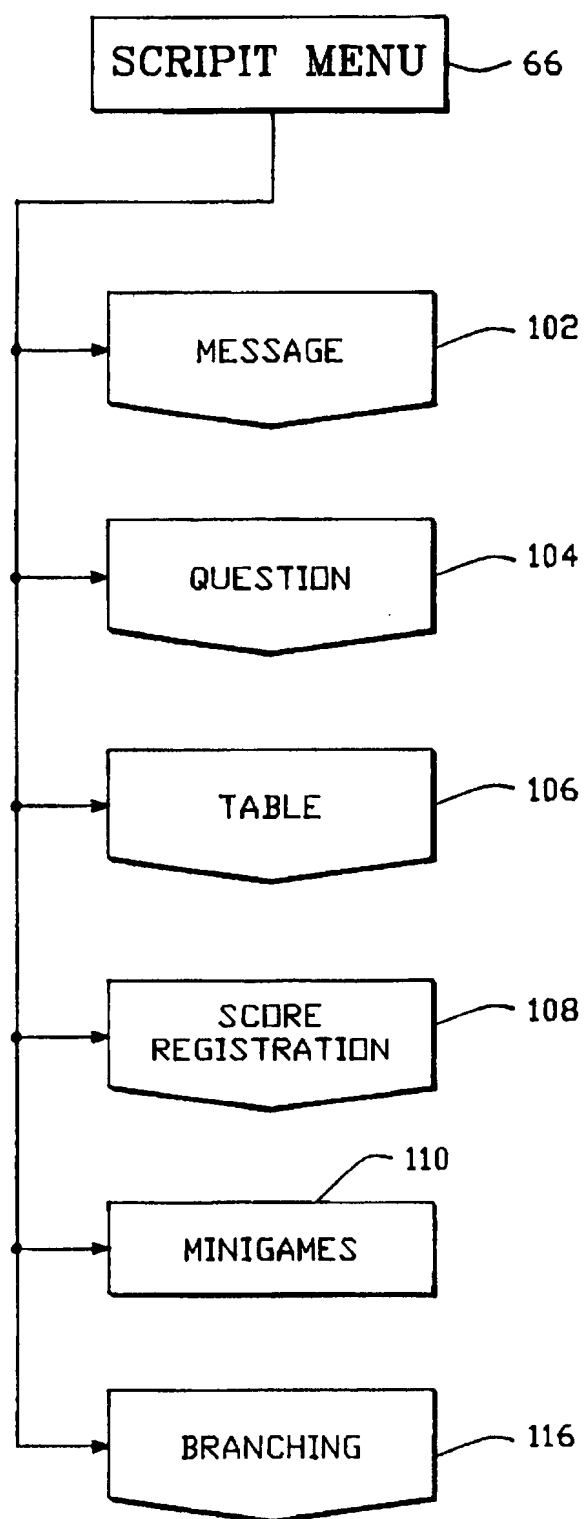


FIG.-3B

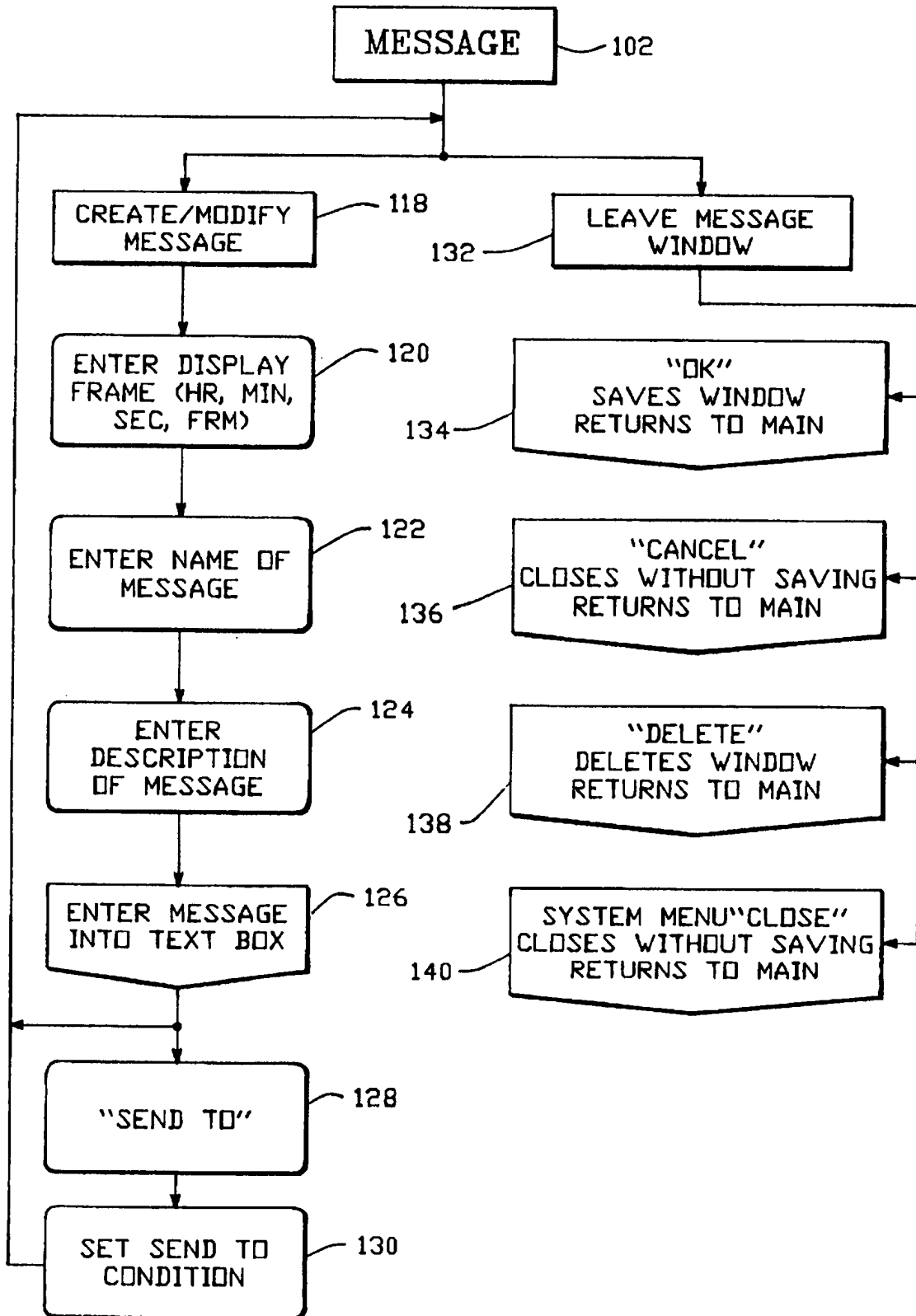


FIG.—3C

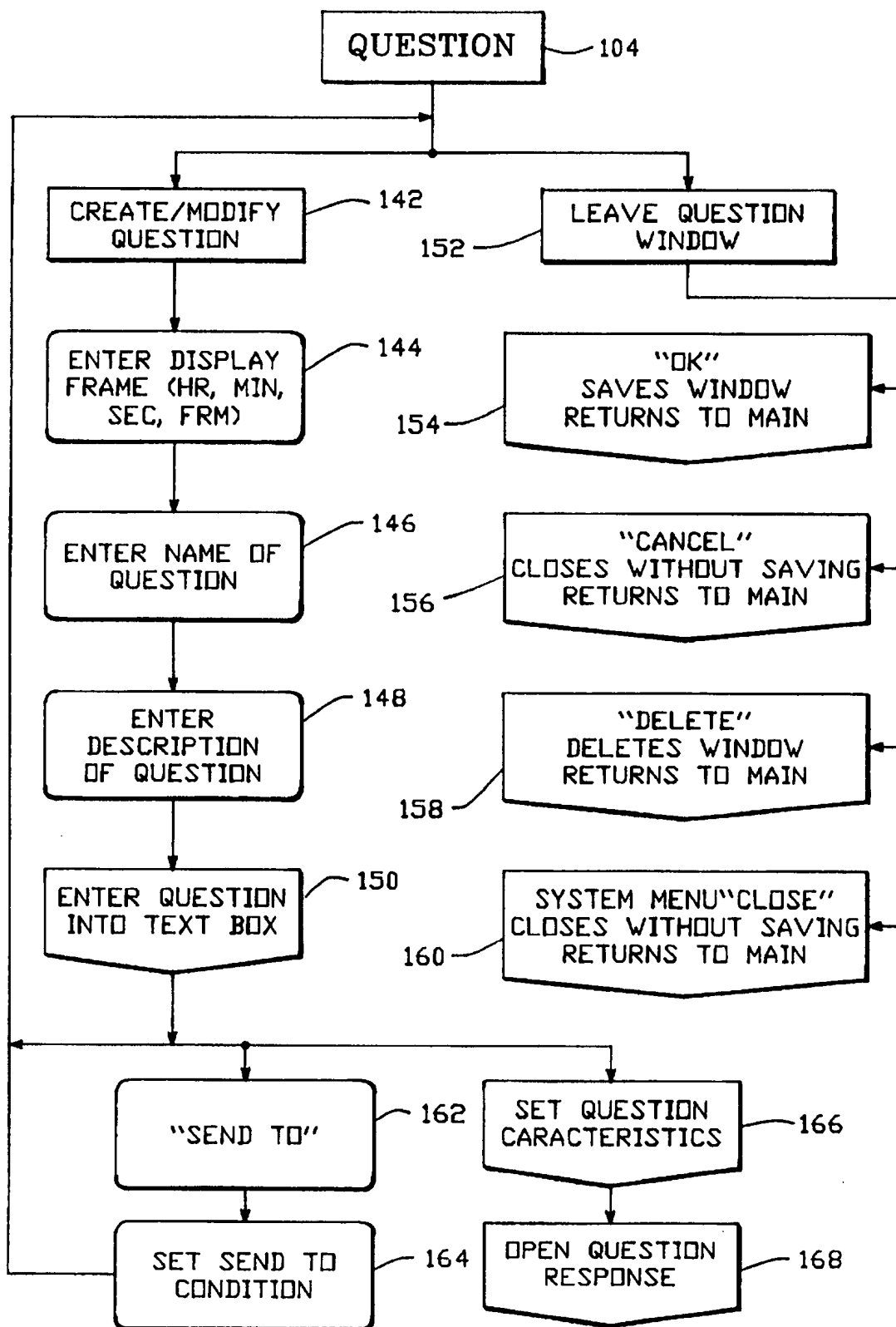


FIG.—3D

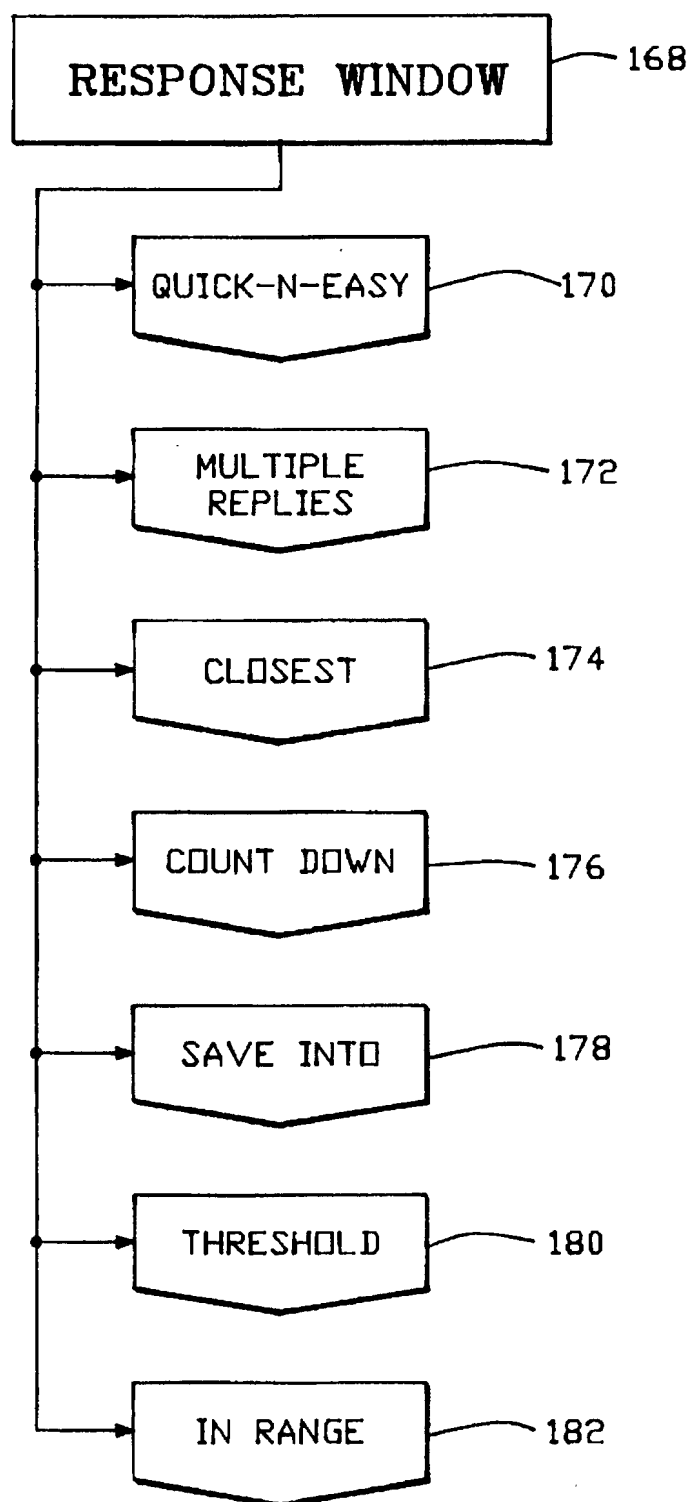


FIG.—3E

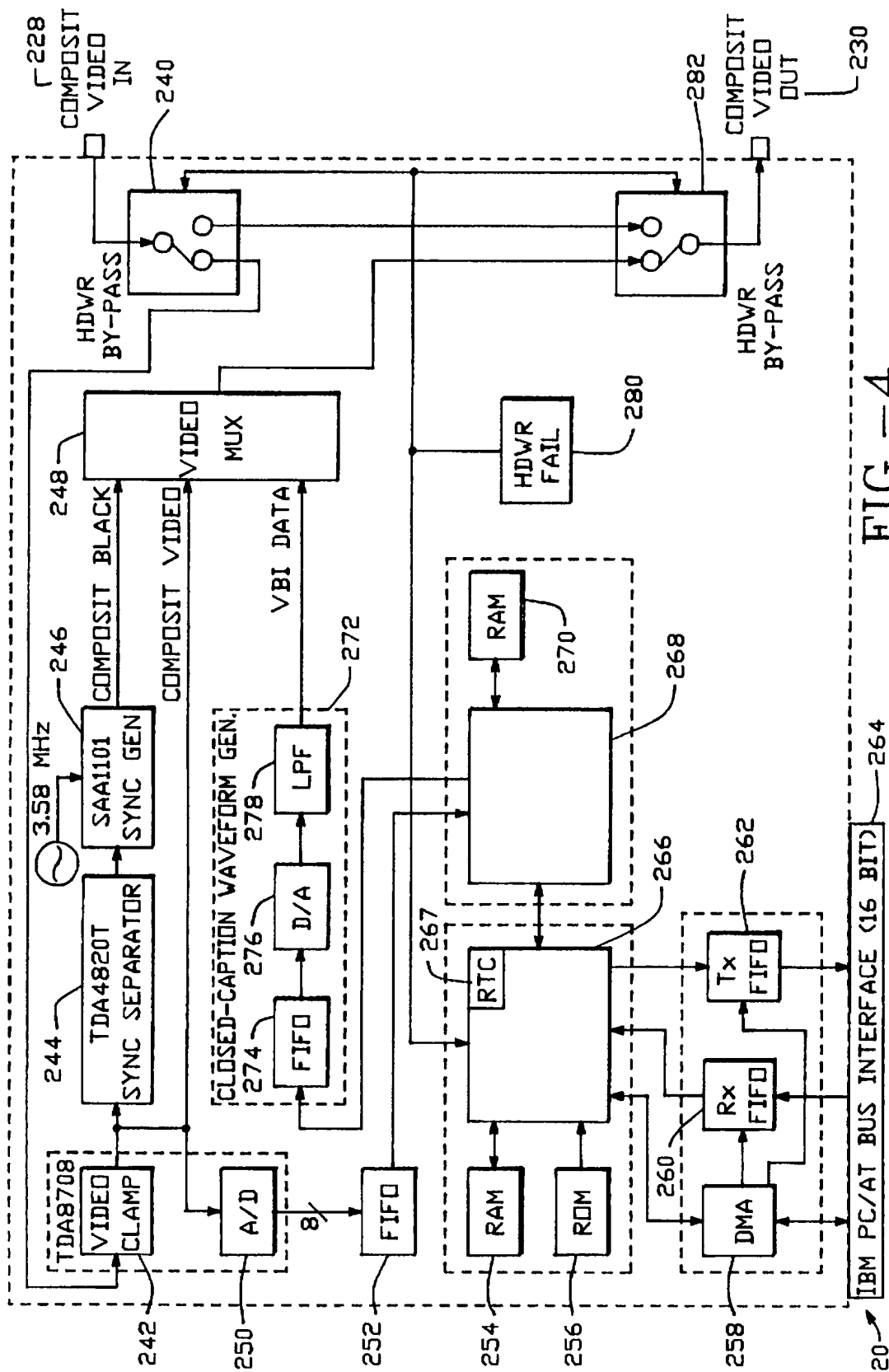


FIG. 4

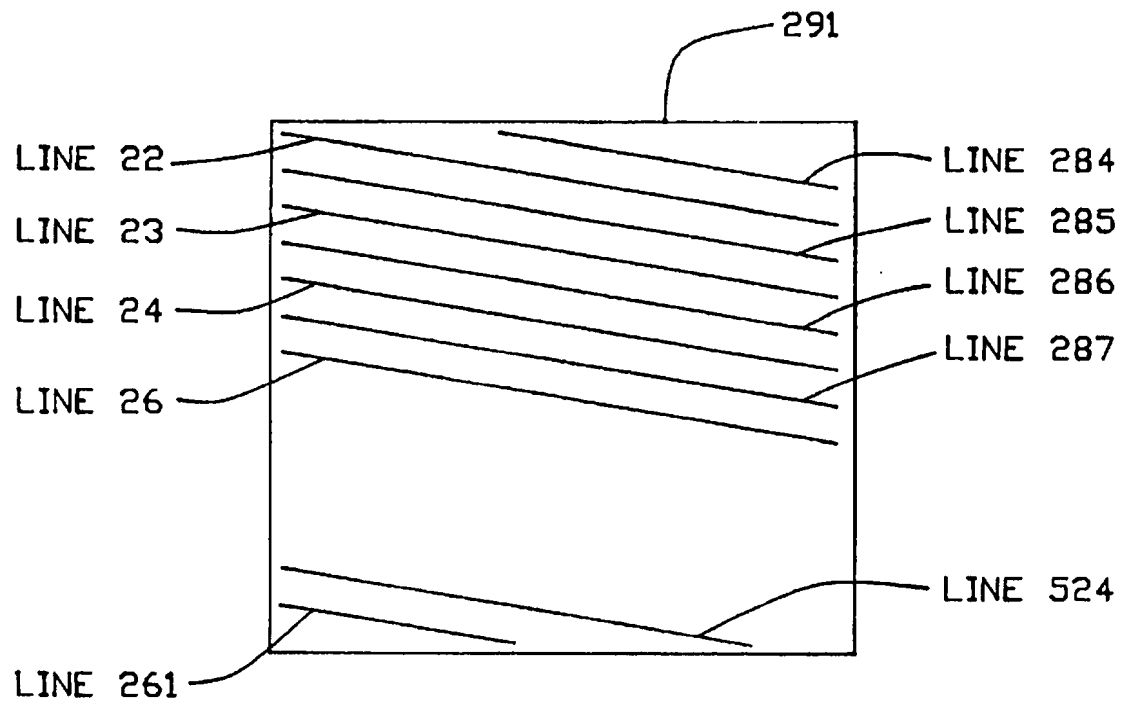
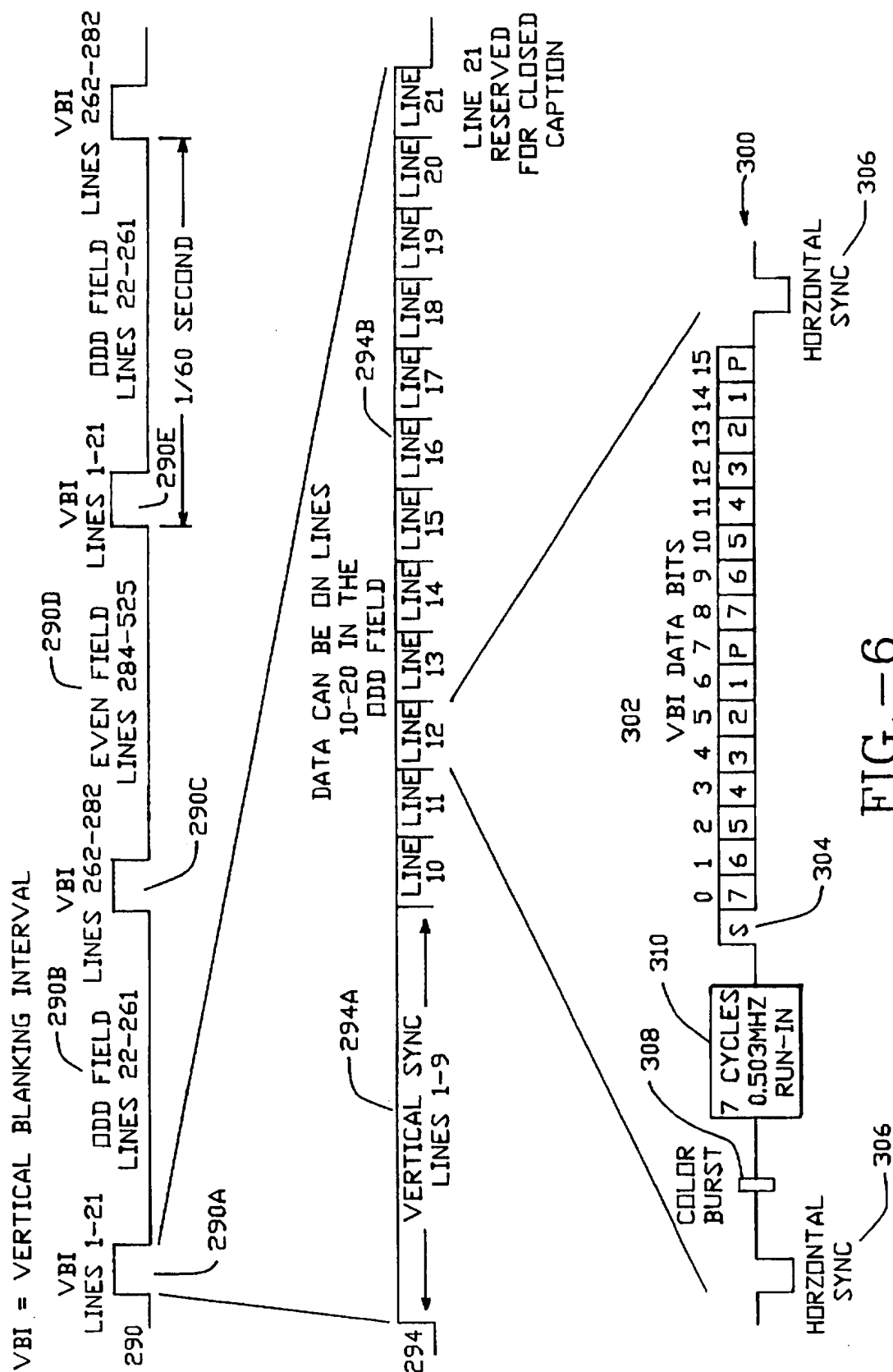


FIG.-5





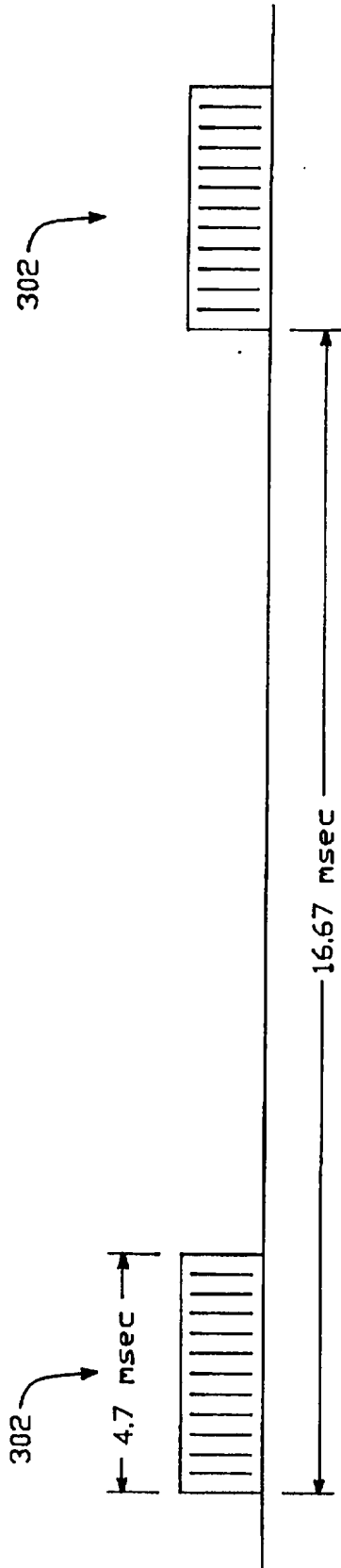


FIG.—7

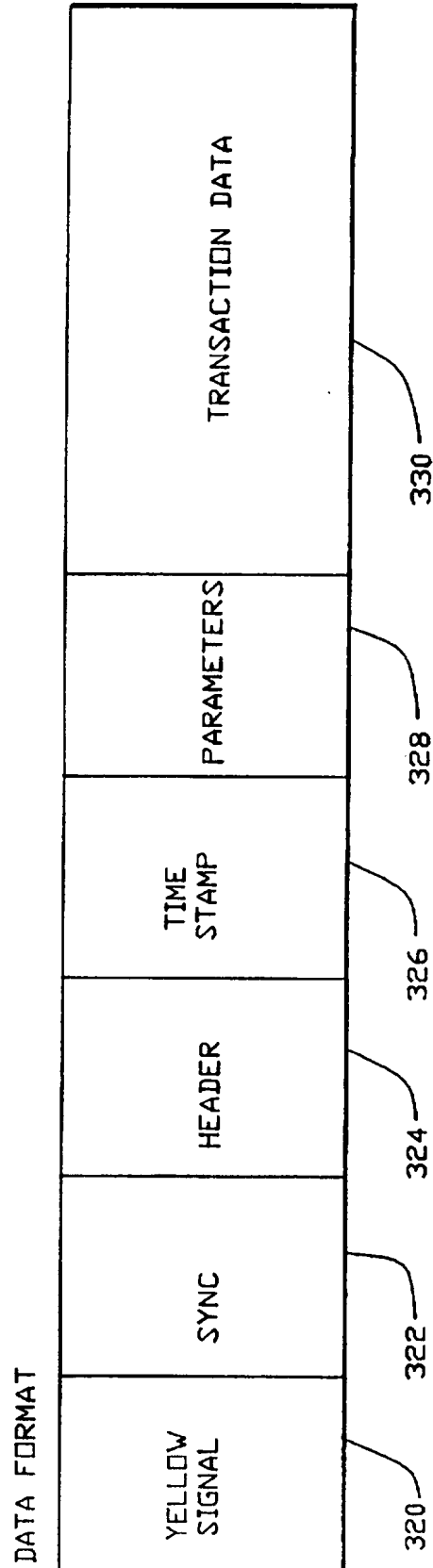


FIG.—8

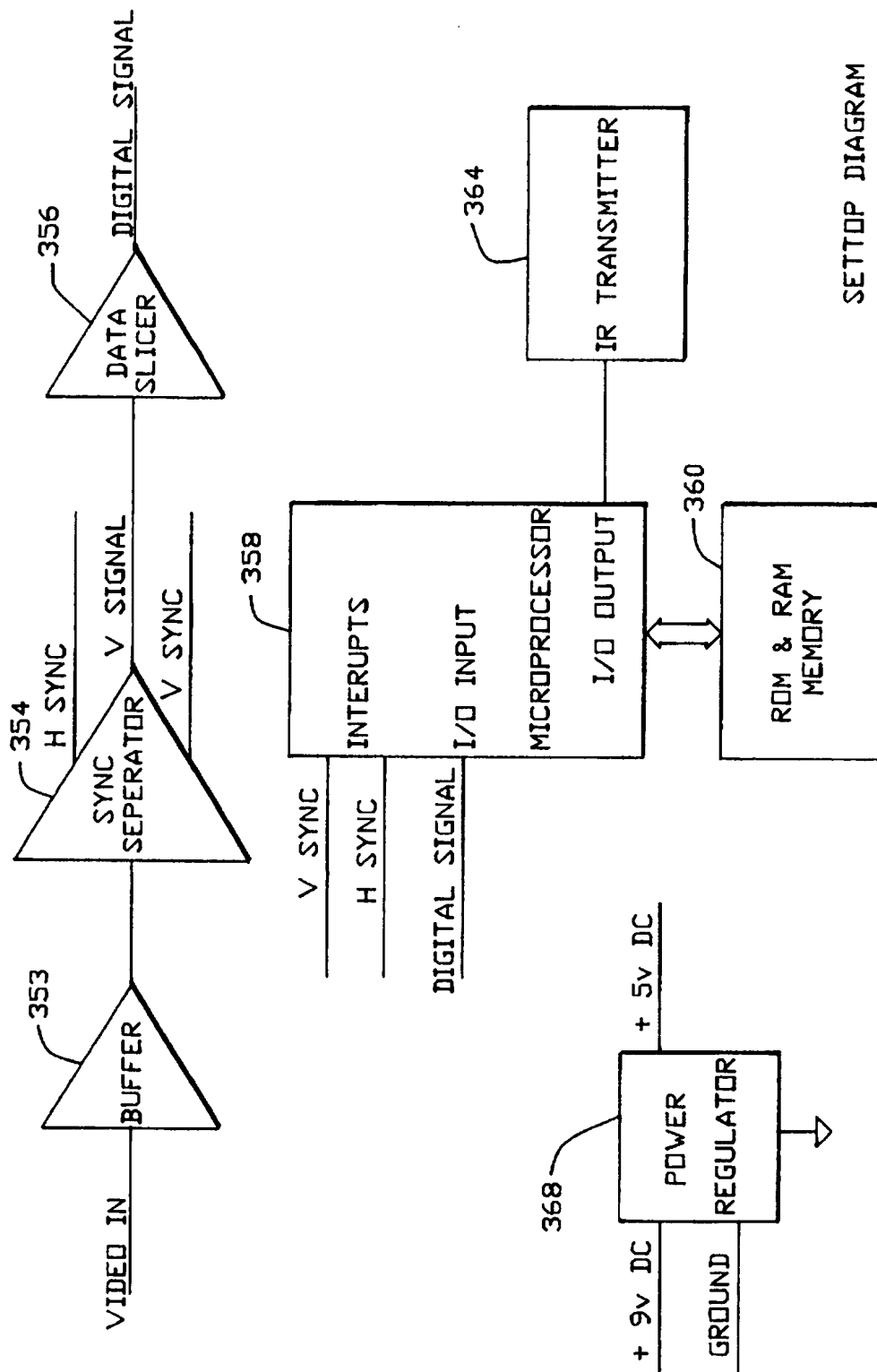
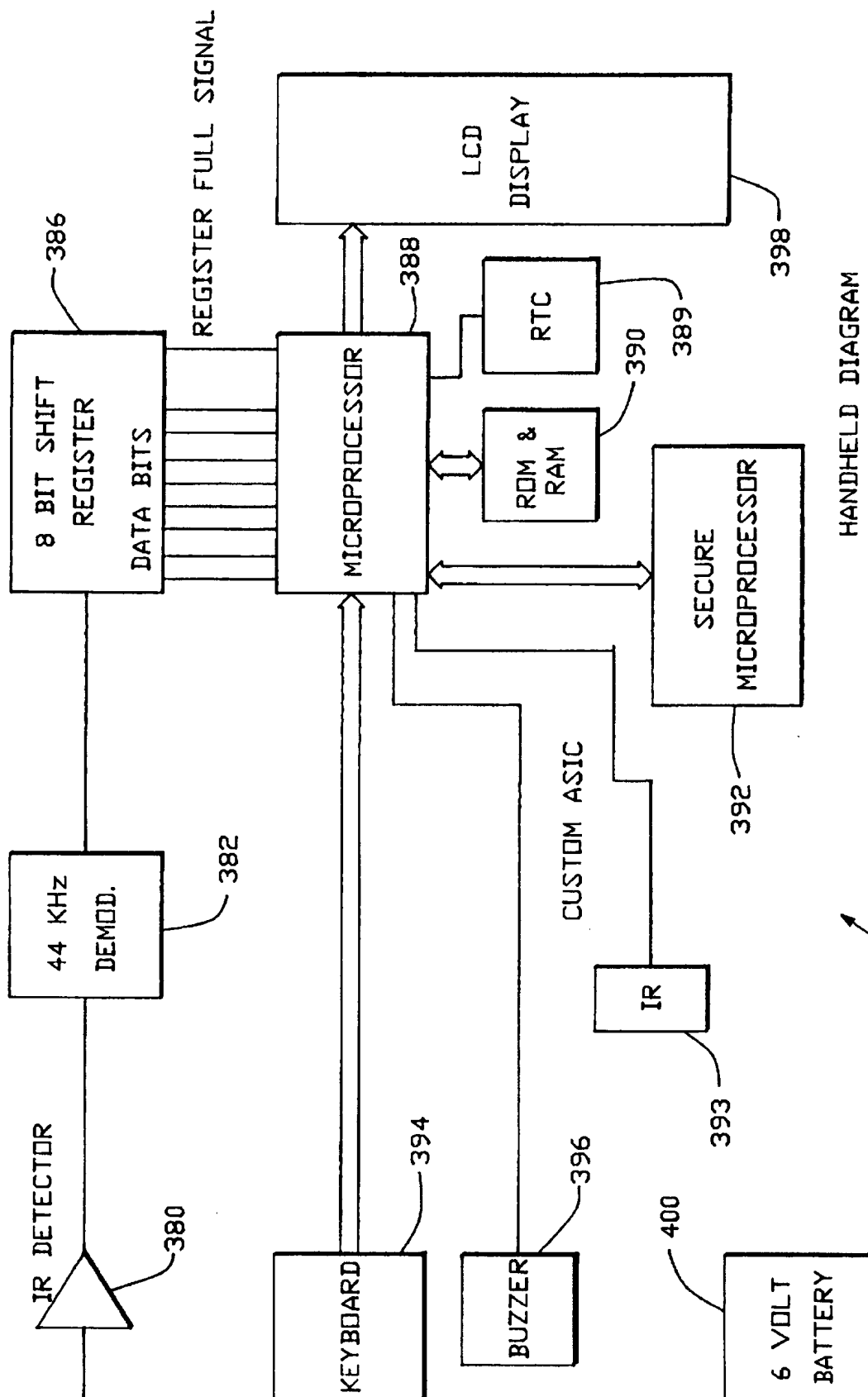


FIG.—9



HANDHELD DIAGRAM

FIG. -10

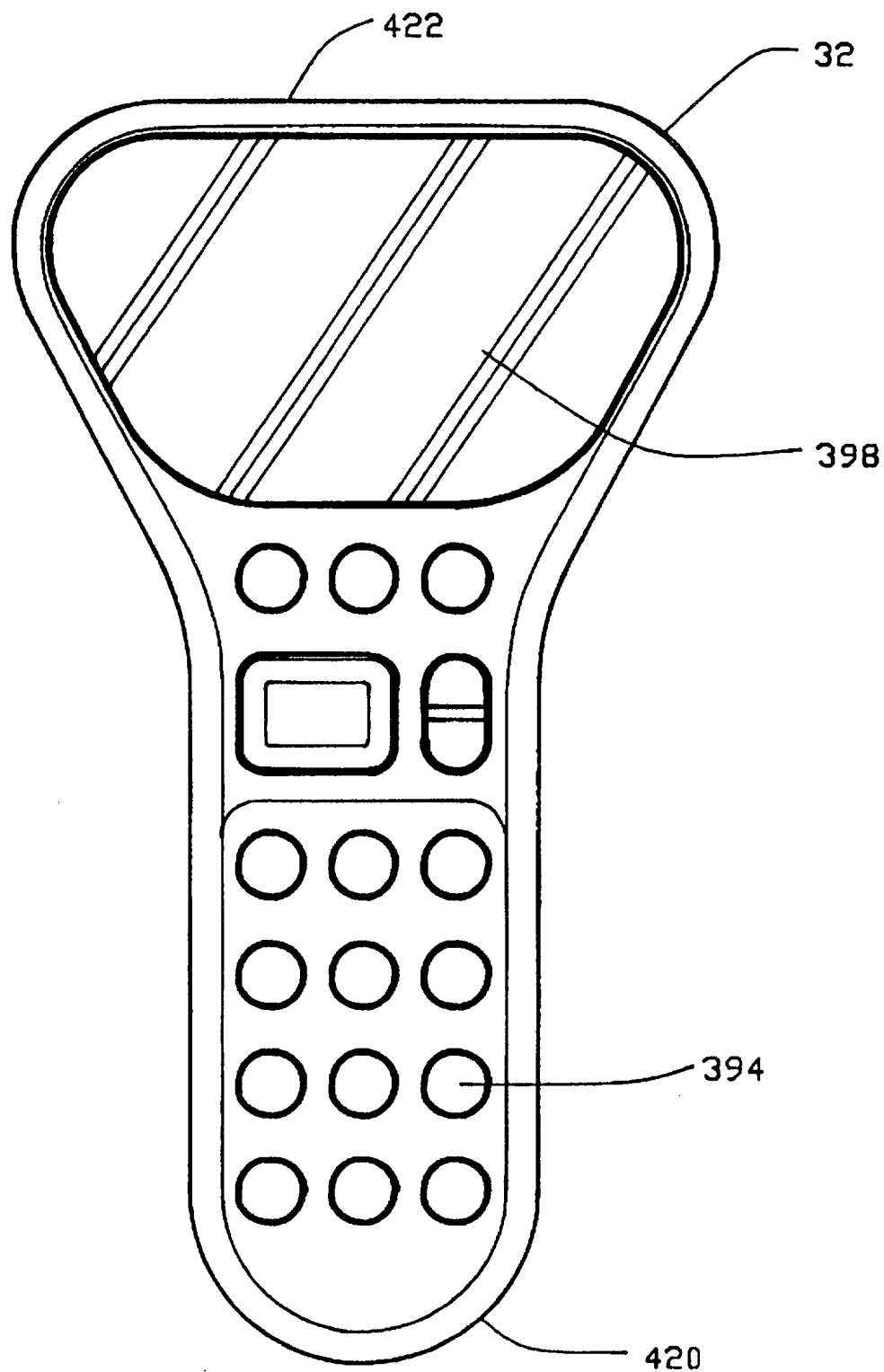
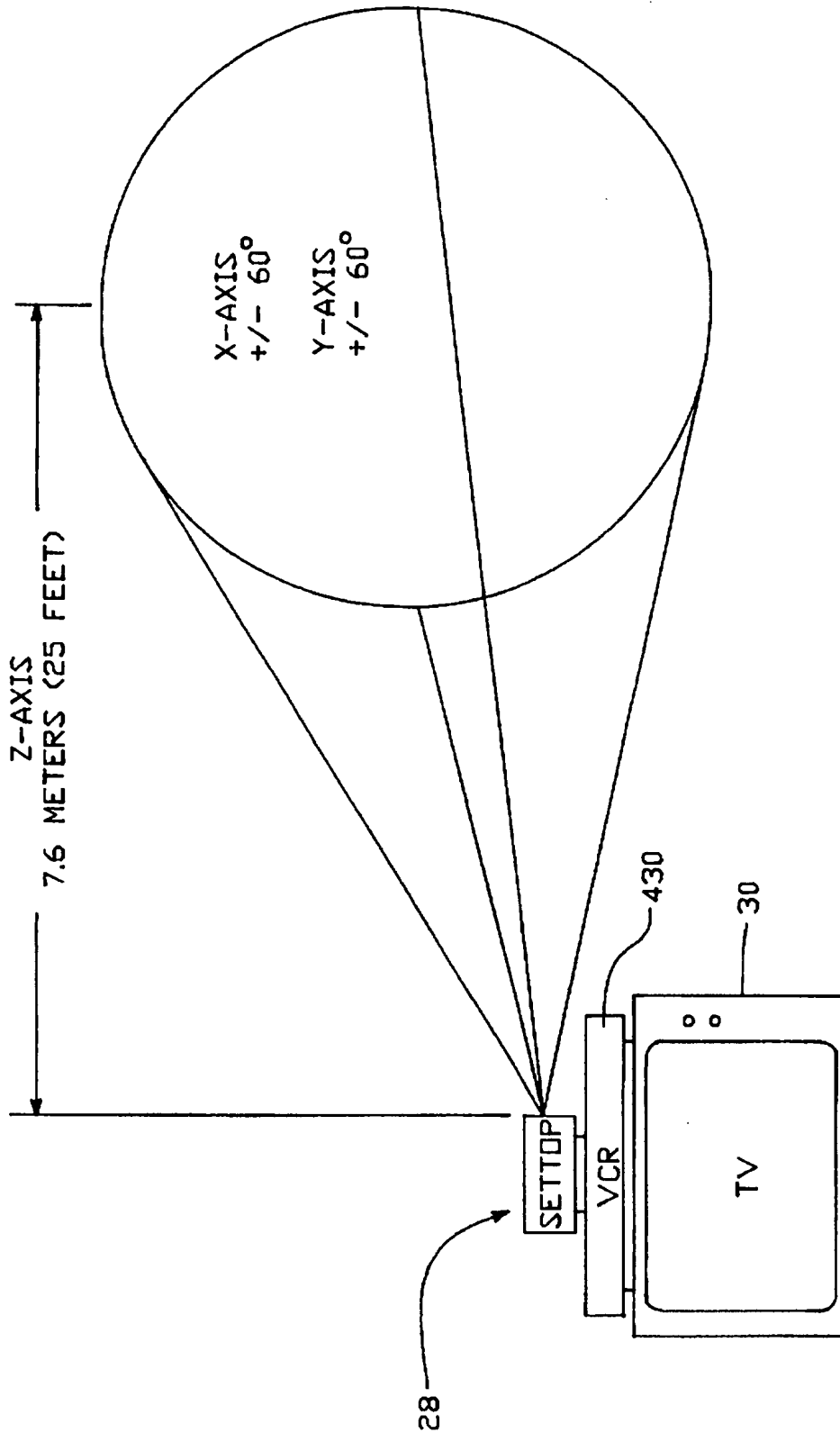


FIG. - 11



INFRARED (IR) COVERAGE AREA

FIG.-12

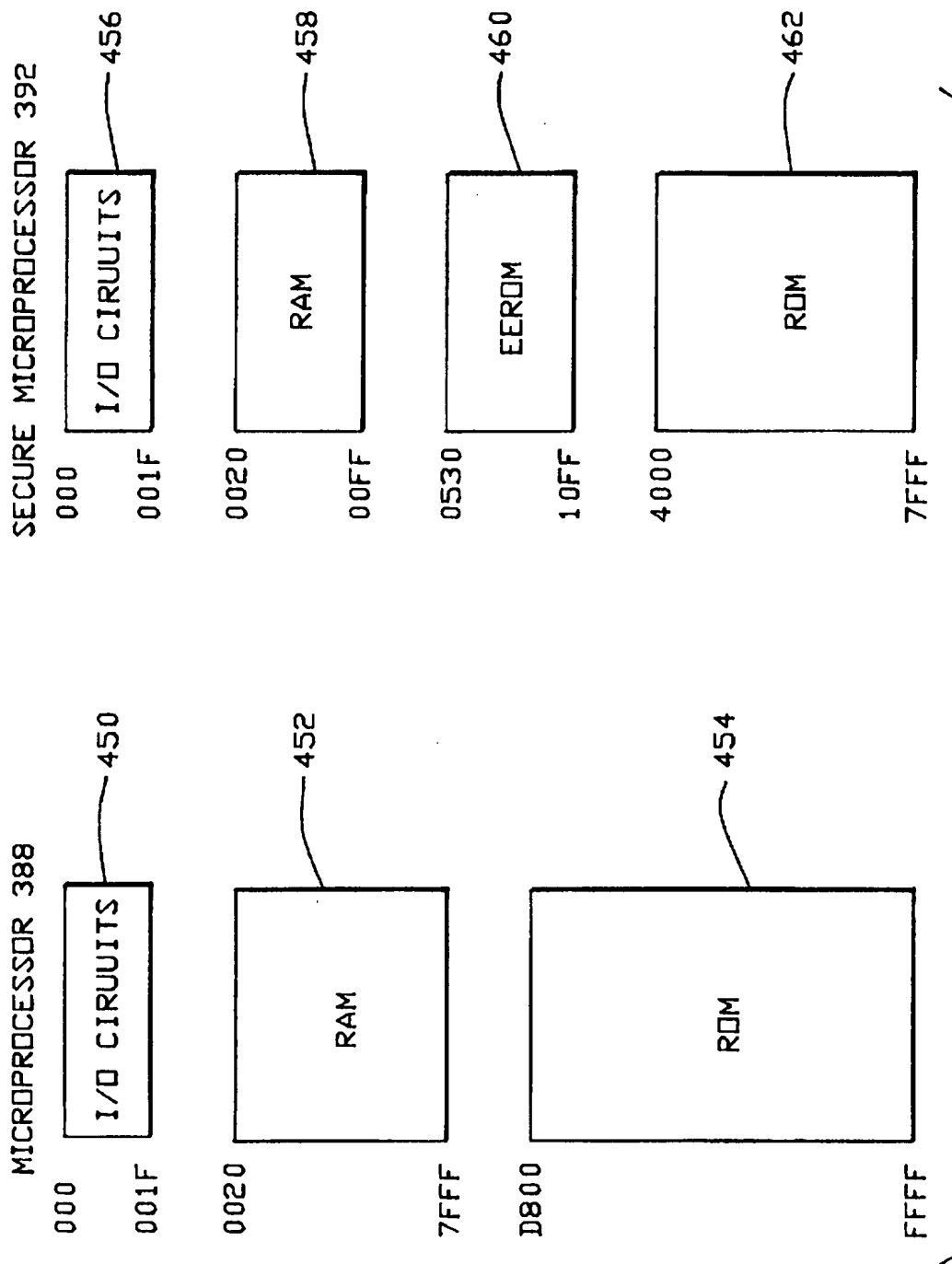


FIG.-13

|                       |     |
|-----------------------|-----|
| MAILBOX               | 470 |
| GROUP                 | 474 |
| UNIT                  | 478 |
| SCORE                 | 482 |
| CUME                  | 484 |
| SAVE 1                | 486 |
| SAVE 2                | 488 |
| SAVE 3                | 490 |
| SAVE 4                | 492 |
| SAVE 5                | 494 |
| SAVE 6                | 496 |
| SAVE 7                | 498 |
| BANK                  | 500 |
| SEGMENT / TRANSACTION | 502 |
| STATUS                | 504 |

FIG.—14

| REGISTERS:  | INPUT | POINTS  | SCORE   | CUME  |
|---|-------|---|---|---|
| <p>QUESTION:</p> <p>25 PTS. Y/N:<br/>DO LIONS<br/>HIBERNATE?</p> <p>THE HANDHELD DISPLAYS<br/>THE QUESTION AND<br/>THEN WAITS FOR CONSUMERS<br/>TO ENTER AN ANSWER.</p> |       |   | <p>FOR THIS EXAMPLE WE WILL<br/>ASSUME THAT THE<br/>CONSUMER'S CURRENT<br/>SCORE IS 75 POINTS.</p>                                | <p>FOR THIS EXAMPLE WE WILL<br/>ASSUME THAT THIS SCRIPT<br/>IS THE SECOND GAME OF<br/>A SERIES; THEREFORE, THE<br/>CUME REGISTER IS EQUAL<br/>TO THE SCORE REGISTER<br/>PLUS THE SCORE FROM<br/>THE FIRST GAME.</p> |
| <p>WRONG:</p> <p>NO. LIONS LIVE IN WARM<br/>CLIMATES AND HAVE NO<br/>NEED TO HIBERNATE.</p> <p>CONSUMERS WHO ENTER YES WILL<br/>SEE THIS RESPONSE MESSAGE.</p>          | 1     | <p>0</p> <p>IF INPUT IS<br/>EQUAL TO 1,<br/>NO POINTS<br/>ARE EARNED.</p>       | <p>75</p> <p><math>75 + 0 = 75</math></p> <p>THE SCORE REGISTER IS<br/>UPDATED BY THE ADDITION<br/>OF THE POINTS REGISTER.</p>    | <p>575</p> <p><math>575 + 0 = 575</math></p> <p>THE CUME REGISTER IS<br/>UPDATED BY THE ADDITION<br/>OF THE POINTS REGISTER.</p>  |
| <p>RIGHT:</p> <p>RIGHT! 25 PTS.</p> <p>CONSUMERS WHO ENTER NO WILL<br/>SEE THIS RESPONSE MESSAGE.</p>   | 2     | <p>25</p> <p>IF INPUT IS<br/>EQUAL TO 2,<br/>THEN 25 POINTS<br/>ARE EARNED.</p> | <p>100</p> <p><math>75 + 25 = 100</math></p> <p>THE SCORE REGISTER IS<br/>UPDATED BY THE ADDITION<br/>OF THE POINTS REGISTER.</p> | <p>600</p> <p><math>575 + 25 = 600</math></p> <p>THE CUME REGISTER IS<br/>UPDATED BY THE ADDITION<br/>OF THE POINTS REGISTER.</p>   |

FIG.-15



# TRANSACTION BASED INTERACTIVE TELEVISION SYSTEM

## CONTINUATION APPLICATION INFORMATION

This Application is a continuation-in-part of application Ser. No. 07/796,085, filed Nov. 20, 1991 now U.S. Pat. No. 5,343,239.

## CROSS-REFERENCE TO RELATED APPLICATIONS

This application is related to the following application, which is assigned to the assignee of the subject application:

"INTERACTIVE TELEVISION SECURITY THROUGH TRANSACTION TIME STAMPING", inventors John P. Lappington Susan K. Marshall, Wayne Y. Yamamoto, Cameron A. Wilson and Richard S. Simons, Application SC/Ser. No. 08/160,079, now U.S. Pat. No. 5,519,433, filed concurrently with this application.

The above related application is incorporated herein by reference.

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention is directed to an interactive television system and in particular, one adapted for use with existing broadcast, cable, and satellite television or radio or other communication systems for allowing participants and viewers to interact with the system in order, by way of example only, to shop, enter into games of skill, and engage in educational presentations and other events where information is provided and the participant or viewer can make an appropriate response thereto.

### 2. Description of the Related Art

Many interactive television products have been introduced that provide the capability for the viewer to participate in television programs. These products accept cue signals transmitted to handheld devices that measure and control the response of the viewers as the viewers participate in the program. Some of these devices implement hardware that monitors the response or the results of responses accumulated over time and reports the results to a central site. One of the early embodiments of this technology was the QUBE interactive two-way television system introduced by Warner Communications at least as early as 1982. Other systems include the INDAX system field tested at least as early as 1984 by Cox Communications.

The interactive television products currently known fall generally within one of two categories. The first category includes systems having firmware in a remote participant's handheld device such that the participant can start playing along with the interactive program as soon as the programs begins. Such a system has limited capabilities in regard to supporting multiple varieties of interactive programs due to the size limitation and permanence of the firmware. The second category maintains the software in random access memory in the viewer's handheld device such that the program must be downloaded into the device prior to the event starting. This process may take up to five minutes, requiring the participant to wait prior to participating in the interactive program. Both categories of devices are designed to work with one interactive program at a time, where the participant must complete that program before being able to participate in a new program.

When the above described products are compared to the television viewing habits of most viewers, significant defi-

ciencies are apparent. Most viewers do not continuously watch one program. Viewers generally switch between several channels. This is so pervasive in the industry that the terms "grazing" and "surfing" have been given to the habit of switching between channels during the programs.

None of the prior art interactive systems allow for interactive programs to be presented concurrently on different television channels so that a viewer may change channels ("graze" or "surf") during the middle of a first interactive program and join a second interactive program already in progress. This would also be a useful feature for a viewer who turns on the television late or who wants to take part in more than one program that overlaps. For example, a viewer may want to play along with a football game but interact with an educational program during halftime. Or, if the viewer starts playing one game and realizes that he or she does not like the program, then the viewer can change channels and join a second program that is already in progress.

Furthermore, the prior art systems require a viewer to schedule an interactive program in order for the system to download the program and tune to the correct television signal, or the viewer must manually tune the interactive system to the correct channel. Thus, if a viewer wishes to change programs (or surf) the viewer must change the television tuner and the interactive system tuner.

Accordingly, an interactive system concept that is compatible with the participants viewing habits is required for interactive television to be successful. This system must include the ability to interleave (or surf between) several interactive programs at the same time and not require a significant amount of advance downloading of programs or initialization information. When the viewer tunes the channel, the viewer should almost immediately be able to participate in the interactive program either if the viewer is for the first time watching that program or the viewer is returning after watching some other program for a brief or extended period.

In the situation where a viewer returns to a program that was previously watched, the interactive game should continue, leaving out only the part that was missed. Any cumulative score for the part of the event actually participated in should be maintained. The result should be the same as if the missed questions were not answered.

The prior art systems do not address these needs and do not allow for viewers to play along with a series of events and maintain a cumulative score. For example, it may be desirable to set up an interactive program to play along with the World Series (7 games), where the viewer guesses the next pitch. At the end of the first game it would be desirable to save the score for that particular game. The viewer can then play along with the second game of the World Series, with the score of the second game added to the score of the first game to maintain a cumulative score that would not be effected should the viewer play along with an educational event during the time period between the first and second games. An analogous use is a child playing along with an educational program, where a cumulative score representing the sum of scores over weeks of interactive play could track the child's progress in learning, for example, to spell or multiply.

In order to efficiently and economically create such a sophisticated interactive program, as described above, the interactive system would need components that enable advertisers, networks, television producers, etc., to create intricate interactive programs without first becoming experts

in the interactive technology or computer programming. Such a system must also allow for various forms of live and delayed programs; for example, constructing interactive programs for live sporting events, reruns of sitcoms, educational programs or game shows.

### SUMMARY OF THE INVENTION

The present invention is directed to overcome the disadvantages of the prior art.

It is, therefore, an object of the present invention to provide a transaction based interactive television system that can create, encode, transmit and present sophisticated interactive programs.

Another object of the present invention is to provide an interactive system that can broadcast many interactive programs at the same time over different channels, allowing viewers to graze or surf between channels or interleave among concurrent interactive programs. The system also allows interactive programs to be timed interleaved on the same channel while maintaining viewer interactivity and accumulating scores with respect to all programs.

Still a further object of the present invention is to provide for an interactive system that allows many programs to be broadcast on the same channel at different times such that scores and data associated with a first interactive program will not be altered when a second interactive program is presented.

Yet another object of the present invention is to provide for an interactive system that allows for a series of interactive programs to be broadcast over extended periods of time where the system can maintain a series or cumulative score.

A further object of the present invention is to provide an interactive system that does not need to be tuned to a television signal as a separate step from tuning the television.

An additional object of the present invention is to provide for an interactive system with flexible programming capabilities. The system could be used with interactive programs of various length, sophistication and format.

Still another object of the present invention is to provide an interactive system that allows for interactive program writers, not educated in computer programming or interactive hardware, to create a sophisticated interactive program.

A further object of the present invention is to provide an interactive system that allows for various modes of presenting interactive programs including live and pre-programmed.

An additional object of the present invention is to provide an interactive television system that has four modes of inserting data into a television signal. First, data is inserted into the television signal as it is created. Second, data is stored in a memory element, and inserted in the television signal on command of an operator. Third, data is created with timing information. And fourth, data is assigned to a specific television frame.

Another object of the present invention is to provide for an interactive system that is compatible with the participants viewing habits. This system includes the ability to maintain several interactive programs active at the same time and not require delays downloading of programs or initialization information. When the viewer tunes the channel, the viewer is almost immediately able to participate in the interactive program either if the viewer is for the first time watching that program or the viewer is returning after watching some other program for a brief or extended period. In the situation

where a viewer returns to a program that was previously watched, the interactive game continues, leaving out only the part that was missed. Any cumulative score for the event actually participated in can be maintained. The result would be the same as if the missed questions were not answered.

The present invention is an interactive television system designed to overcome the problems and disadvantages associated with the prior art and to address the way participants actually view television events.

Interactive television adds an exciting dimension to current television programming by increasing viewer involvement. For example, interactive television can make game shows more exciting for viewers who can play along with the on-air contestants. Sporting events become more fun for viewers who can judge competitions, match wits with the coaches and test their knowledge of the game, its stars and history. Original classics, reruns and re-aired programs are more entertaining for viewers who participate in solving mysteries and puzzles, and answering trivia and pop culture questions. News, documentary, and talk shows are more compelling for viewers who receive additional information on the subjects on which they are interested in, participate in polls on topics that concern them, and learn important self-help tips. Movies can be enriched with trivia games and information. Music videos, specials and variety shows are more interesting with viewer judging, surveys and pop culture questions. New programs, including premiers and special events will attract larger audiences through interactive promotions and contests. Interactive promotions and contests provide an incentive for viewers to stay with programs for their entirety, and to tune into a series consistently over the course of a day, week, or season.

Additionally, interactive television creates an active viewing experience that can highlight the educational, informational and public service aspects of television. As a result, viewers will feel better about their television viewing, and thus will be more interested in watching television for longer periods of time. For example, interactive television could be used to turn cartoons into learning and entertaining experiences. A TOM AND JERRY cartoon could include an interactive question asking, "If Tom caught 22 mice and ate 10, how many would he have left?" Thus, a child can enjoy cartoons and simultaneously learn.

Interactive television's enhancement of the viewer's experience translates into benefits for networks, producers and advertisers. An interactive television system can increase viewership, build viewer loyalty, increase television's educational value, enhance a networks image, enhance on-air promotion, create new opportunities for advertiser involvement, enable a network or cable station to get to know its audience and generate additional sources of revenue. Furthermore, interactive programs can increase viewer awareness and promotional exposure without decreasing ad spot inventory. For example, interactive programming can be an ideal tool for creating self-liquidating promotional campaigns utilizing advertiser tie-ins. Special messages and games can entice viewers to watch commercials. Alternatively, a network can team with sponsors to promote and benefit from merchandising possibilities such as logo merchandising, marketing clothes and selling books authored by talk show guests.

Furthermore, interactive programming allows networks, advertisers, or other interested entities to understand the audience by taking advantage of interactive televisions' data gathering tools. For example, audience demographics, such as number, age, gender and income of viewers, can be

collected. Polling questions can be asked to determine the likes and dislikes of a given audience.

The present invention provides for a transaction based interactive television system whereby the various interactions between the system and the viewer, which can occur over a period time, can be broken down into and defined by a plurality of transactions. The transactions preferably are presented through data sent over and incorporated in the vertical blanking interval ("VBI") of the television signal although other methods are presented in the available literature. The transactions use programmer tables which are provided in a memory device in, for example, a handheld device used by the viewer to interact with the television presentation.

With a transaction based system, multiple games and interactions dealing with different subject matter can be accomplished in an interleaved manner. For example, during an hour long television presentation, a number of transactions can be strung together in order to interact with a continuous theme being presented in the main programming for that hour. Additionally, should the main programming be broken down into sections, the transactions can be grouped as necessary in order to represent the desired interactivity with each portion of the main program.

The present system has the capability of allowing, for example, a transaction or grouping of transactions to take place for each of the multiple commercials which are spread throughout the main presentation. Thus, the present system affords the ability for the viewer to play and interact with multiple transactions which can be associated with totally different interactive presentations on the screen, which can be time independent, and have all of the interactions properly recorded and scored. Because each transaction can be programmed through the use of only a few VBI lines, the system allows a viewer to begin playing a game or interacting with the television presentation during substantially any portion of the presentation and also allows the viewer to switch channels, "graze" or "surf" and still be almost immediately able to play or interact with any game or presentation presented on the newly selected channel.

This ability presents a significant advantage over the prior art which requires, as indicated above, that the viewer pre-tune to a specific channel ahead of the game time so that the necessary game software can be downloaded, over a significant interval of time, into the remote terminal before the game can be commenced.

The present invention relates to an interactive system that includes an authoring system for creating sophisticated interactive programs, a data insertion system for inserting the interactive programs into the vertical blanking interval or other portion of a television, radio or other signal, means for transmitting the encoded television signal to remote sites, a settop device for stripping the interactive data from the television signal, and a handheld apparatus that presents the interactive program and allows the viewer to participate in the interactive program.

Furthermore, the present invention need not specifically be tuned by the viewer to the appropriate channel. Rather, the interactive system monitors the signal tuned into by the television.

In one embodiment, the system includes a receiver that receives during a first time interval a first set of interactive data including a first set of commands and a first set of event specific data associated with a first event. During a second time interval, the receiver receives a second set of interactive data including a second set of commands and second event

specific data associated with a second event. The system further includes a means for presenting the first event to a viewer based on the first interactive data. The presentation means also presents the second event to the viewer based on the second interactive data. The system further includes a memory unit in communication with the presentation means that includes a first programmer table storing transaction data associated with the first event and a second programmer table storing transaction data associated with the second event. Presenting transactions based on the first interactive data does not effect the second programmer table. Presenting transactions to a viewer based on the second interactive data does not effect the first programmer table.

The data insertion system also includes a gate keeping ability, related to a valid stamp within the interactive data, which allows the data insertion system to prevent the handheld from acting on invalid data. The data insertion system can also assign priorities to tasks and download lower priority information at appropriate times. Script data would have the highest priority, while cross-promotional data, mail and bulletin board activities would have a lower priority and be sent when high priority data is idle.

The data insertion system also includes FEC coding, encrypting, CRC and interleaving, which allows for recovering a lost VBI line as well as random bit errors.

In another embodiment, the memory unit has a plurality of programmer tables for storing data. The plurality of programmer tables includes a secured programmer table, an unsecured programmer table and an event specific programmer table. The programmer tables can be leased or licensed for various lengths of time. Access codes can be sold to script writers over phone lines. These codes will allow the script writer to use selected programmer tables for selected periods of time.

In one embodiment, the interactive system includes a handheld unit for interacting with the television program. The handheld unit includes a memory element, a keypad for entering data, and a processor which controls the presentation of interactive events or programs.

In one embodiment of the invention, an authoring system is included which has a means for choosing a programmer table from the plurality of programmer tables and means for creating a script. The means for creating a script includes one or more of means for creating a message, creating a question, creating appropriate responses, and for creating response criteria. This embodiment further includes a means for compiling the script to create interactive data. The authoring system allows the script writer to create a mini-game. Mini-games allows a user to play a game within a game.

The present invention includes a method for receiving and presenting interactive programs on an interactive system. The method can utilize an interactive system which includes a memory unit having a first programmer table with a first identification code and a second programmer table with a second identification code different from the first identification code. The steps of the method include receiving first interactive data, the first interactive data preferably including commands and event specific data containing a reference to the first identification code. The viewer is presented with a first transaction based on the first interactive data without effecting the second programmer table. The first programmer table is updated based on the first transaction without effecting the second programmer table. Second interactive data is received. The second interactive data preferably includes commands and even specific data containing a

reference to a second identification code. The viewer is presented with a second transaction based on the second interactive data without effecting the first programmer table. The second programmer table is updated without effecting the first programmer table. Third interactive data is received. The third interactive data preferably includes commands and event specific data containing a reference to the first identification number in order to use the first programmer table. The viewer is presented with a third transaction based on the third interactive data without effecting the second programmer table. The first programmer table is updated by the third interactive data without effecting the second programmer table. With this method, the system allows for two programs to be interleaved using designated programmer tables.

Thus, the present invention interactive television system allows many different interactive programs to be broadcast at different times on the same channel; many interactive programs to broadcast at the same time on different channels; one interactive program to be broadcast at the same time on different channels; and multiple programs to use the same programmer table at different times. This multi-channel/multi-user feature coupled with the handheld user's ability to interleave games on different channels provides a more versatile system than any disclosed in the known prior art.

These and other objects and advantages of the invention will be appear more clearly from the following description in which the preferred embodiments of the invention have been set forth in detail in conjunction with the drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 depicts a block diagram of the interactive television system.

FIG. 2 depicts a partial block diagram of the interactive television system configured for adding interactive data to a videotape.

FIG. 3A is a flow chart and block diagram explaining the Main Menu of the Authoring System.

FIG. 3B is a flow chart and block diagram explaining the Script Menu of the Authoring System.

FIG. 3C is a flow chart and block diagram explaining the Message Window of the Authoring System.

FIG. 3D is a flow chart and block diagram explaining the Question Window of the Authoring System.

FIG. 3E is a flow chart and block diagram explaining the Response Window of the Authoring System.

FIG. 4 is a block diagram of the Insertion Card of the Present Invention.

FIG. 5 shows the travel of the cathode ray, and the lines of data on a standard television.

FIG. 6 shows the data structure on the Vertical Blanking Interval.

FIG. 7 depicts the data spacing for the data of FIG. 6.

FIG. 8 shows the format of the interactive data transmitted on the vertical blanking interval.

FIG. 9 is a block diagram of the settop device.

FIG. 10 is a block diagram of the handheld.

FIG. 11 depicts a top plan view of the handheld.

FIG. 12 depicts a representation of the infrared coverage area for the present invention.

FIG. 13 is a Memory Map for the handheld.

FIG. 14 is a block diagram of a programmer table.

FIG. 15 depicts an example of how the registers in the handheld are updated during a transaction.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

##### I. System Overview

FIG. 1 shows interactive system 10. An authoring system 12 is used to create/program interactive data. That is, a programmer (also called a script writer) develops a set of questions or informational statements to be sent to a viewer during a television broadcast. Questions could also be accompanied by responses, response criteria and/or scoring criteria. The script writer could also determine when during the broadcast the questions should be transmitted and presented, and how a question will fit into an overall game or series. A script writer using authoring system 12 creates commands and event specific data, which are used to present the interactive program to a viewer.

After a script writer creates the interactive program, the interactive data is first sent to data insertion control 14, which controls the insertion of interactive data preferably into the vertical blanking interval ("VBI") of incoming television signal 16. Television signal 16 can be, for example, a show to be aired on a network such as a sitcom or baseball game. Insertion control 14 utilizes Insertion Card 20 to insert the interactive data onto television signal 16.

There are four different modes for inserting data onto the VBI. The first mode is a straight insertion. Interactive data is designed using authoring system 12 and is sent to data insertion control 14, which places it immediately into the VBI of television signal 16 to create encoded signal 22. Encoded signal 22 can be immediately transmitted to home viewers or video taped. A second mode is to pre-produce the interactive data with time data. Data insertion control 14 would insert the interactive data onto the VBI at the appropriate time. Third, the information could be pre-produced for real time insertion into a live event. In this situation the data would be stored in a memory device and an operator would, via a control panel, signal when a given transaction should be encoded on to the VBI. Finally, it is contemplated that interactive data could be designed and synchronized to a specific video frame.

Insertion Card 20 adds (or encodes) the interactive data to the VBI lines of television signal 16, and sends the encoded television signal 22 to a transmitter, all at the direction of data insertion control 14. Data insertion control 14 is responsible for processing, scheduling, time stamping and validation, as well as administrative functions associated with data insertion. Device driver 18 serves as an interface between Insertion Card 20 and data insertion control 14. In an alternative embodiment, rather than using the VBI lines, interactive data could be transmitted using the audio portion of a television signal, luminance, digital packets, radio communication or other appropriate mediums.

Encoded television signal 22 can be sent from satellite transmitter 24 and received by a satellite receiver 26. It is contemplated that satellite receiver 26 could be part of a cable system where the signal received by satellite receiver 26 is then sent via cable TV to home viewers. Instead of using a satellite and a cable system, the television signal could be broadcast using a standard television transmitter, transmitted using straight cable without satellites or transmitted with any other means for transmitting a television signal.

The signal received by satellite receiver 26 is sent to the home viewer where it is received by television set 30 and settop device/converter 28. Television 30 plays the original television program. Settop device 28 receives the encoded television signal and strips out the interactive data. Settop device 28 sends the interactive data by infrared transmission

to handheld 32, which presents the interactive program to the home viewer. Thus, while the home viewer watches TV 30, the viewer can participate in the interactive program presented on handheld 32. Although infrared transmission is preferred, any other means for transmission will suffice; for example, radio communication or a wire. Transmission via infrared or radio is more efficient than a wire because many viewers, each with their own handheld, can participate simultaneously.

Upon completion of an interactive program the viewer could register his/her score with operations 34, which would be a central or regional office for collecting scores, survey information, etc. Registering can be accomplished utilizing many alternatives. The preferred method for registering scores includes handheld 32 transmitting, via infrared communication, the registration information to dialer 33. After receiving the registration information, dialer 33, which includes a modem, sends the information to operations 34.

Alternative methods for registering scores include a home viewer reading a code from handheld 32 to an operator over conventional telephone lines, the viewer inputting a code into a central computer using the touch tone keys on the telephone, or including a modem inside handheld 32 so that handheld 32 can communicate over the telephone lines with a computer at operations 34. It is also contemplated that a viewer could contact operations 34 via a radio signal, cable or another communication medium.

FIG. 2 shows the interactive system configured to add an interactive program to a pre-existing television signal that is on a video tape or equivalent. Play tape deck 40 is used to play source tape 42, which contains the pre-recorded television program. Play tape deck 40 can be used to read time codes from source tape 42 or there can be a time code generator inserted between the play tape deck 40 and the time code reader 44. Time code reader 44 reads the timing information in order to determine when data may be inserted, and transmits this information to data insertion control 14. As described with respect to FIG. 1, data insertion control 14, in conjunction with device driver 18 and Insertion Card 20, inserts interactive data into the signal emanating from source tape 42. The encoded signal is sent to record tape deck 46 and recorded on encoded tape 48, which will contain the pre-recorded television program plus the interactive data. Encoded tape 48 can then be stored for later broadcast.

When a television program (live or pre-programmed) with interactive data is broadcast, the interactive data will be transparent to viewers that do not have the interactive system. That is, someone without handheld 32 will not know that an interactive data is being presented.

Each of the components described above in regard to FIG. 1 will be discussed in more detail below.

## II. Authoring System

As described above, the authoring system is the software application used to create interactive programs. The preferred embodiment authoring system 12 is a computer (IBM PC 386 or 486, or any other programmable computer) using authoring system software (a windows application) that generates interactive data including commands and event specific data. While the script writer is designing an interactive program, a script file is created that includes an English-like description of the various questions and answers etc., for an interactive program. Authoring system 12 includes a two part compiler. During the first phase of the compilation, a symbolic file is created from the script file. The symbolic file is analogous to source code associated with a typical computer program. During the second phase

of the compilation, an object file is created from the symbolic file. The object file contains commands and event specific data that is read by the data insertion system. The commands could be part of a proprietary high level command language or any other assembly-like commands.

When the interactive program is at the creation stage, on authoring system 12, it is called a script. The fundamental building block of a script is called a scriptlet. A scriptlet is a stand alone element that does not require another scriptlet to function. Examples of scriptlets include messages, questions, responses, criteria, and tables (to be explained below). An aggregate of scriptlets make up a script.

A transaction is the compiled version of a scriptlet or group of scriptlets which is time oriented. That is, all the data for a transaction is sent to handheld 32 at one time. Examples of transactions include messages, questions, responses, scoring criteria, branching conditions or a combination thereof. A group of one or more transactions make up a segment. A segment is a group of transactions that must be played sequentially. For example, a segment may include a transaction asking a question, a transaction disclosing the correct answer, a transaction scoring the viewer's response, a transaction providing the viewer with feedback or a combination thereof. Each transaction is numbered so that the first transaction in a segment is assigned a transaction number of one.

Thus, a script writer designs a script, and the script is compiled and broken down into a series of transactions which are sent to handheld 32. There are several types of scripts which can be designed separately or in combination, for example: standard mode, live events, polling, program or series, mini-games, or pay-per-play. A standard mode script can be either encoded onto a video tape or sent to data insertion 14 to be inserted in the VBI of a television signal in accord with the timing information programmed by the script writer. Live event scripts are to be used with live events, for example, sports, news and talk shows. With a live mode script, the script writer has selected text but does not insert timing information into the script. Rather, the script writer just sends a transaction at the appropriate time.

A polling script allows an opportunity for viewers to talk back to their television. Polling scripts gather information from the audience, including who they are, where they are and what they like. A polling script is used in conjunction with viewers calling in their scores. Applications include a teaser for news and talk shows. For example, a script could ask questions related to the next episode and then provide the poll results at the beginning of the next show. Or, the polls can be used as a comparison device, asking viewers questions, then later revealing where their opinions rank in relation to other viewers. It can also be used to rate the programs on a particular network and voice their opinions on what types of programming they would prefer. Finally, it can be used as a source for market research, verifying viewership and audience demographics.

Series scripts allows a number of individual games to be grouped into a series. This allows a programmer to devise on-going games in which player's scores can accumulate from game to game with a running tally (cumulative score) stored in handheld 32. An example of a series script is an interactive program designed to be played along with all seven games of the world series.

Mini-games are complete games (groups of one or more segments) within a script. Mini-games allows the viewer to play self-contained games within games. For example, a game show may have 3 contests during the program. Each contest could be a mini-game. Mini-games have unique

properties and conditions that make them integral and useful parts of scripts, such as not automatically updating the cumulative score after each transaction or segment. The script writer can choose to update the cumulative score with the mini-game score at the completion of the mini-game, or save the mini-game score to be used for another mini-game. For example, if a script is being developed for a football game, the script writer can choose to report the viewer's scores by quarters. At the end of each quarter, the accumulated points for the quarter will be posted to the total.

Special programs or series can be designated as pay-per-play events. Interactive programs created for pay-per-play programming are only available to viewers who pay pre-registration fees. A special access code given to viewers who pay the fee allows handheld 32 to receive the transactions that are a part of the pay-per-play event. The pay-per-play feature can be used to create high stakes competitions as well as for premier and special events. Such programs utilize the event specific programmer tables, discussed below.

Scripts can be written with different levels of play which can be sent simultaneously to all handhelds 32. This feature allows a programmer to tailor scripts to different skills, ages and interests. Viewers chose their game level and then receive questions only for that level of play.

A script has three main components: messages, questions, and responses. Messages are text displayed on handheld 32 that do not require input from the viewer. Messages can introduce a show or provide information about the program. For example, a message may state, "Hello, welcome to the Super Bowl." Questions are text that request input from the viewer. There are preferably six types of questions: Yes/No, True/False, Multiple Choice, Integer, Decimal, and Fill In The Blank.

Responses are scoring methods and messages, based on an answers entered by a viewer. For example, if the viewer correctly answers a multiple choice question, the viewer could be awarded 25 points and a message would be displayed stating, "Great, you earned 25 points." In the preferred embodiment, there are preferably seven response options from which to choose: Quick and Easy, Multiple Replies, Closest, Count Down, Save Into, Threshold, and In-Range.

Quick and Easy displays one message for a right answer and one message for a wrong answer. Multiple Replies can display a unique message for each answer, with up to seven possibilities. For example, a question may have three acceptable answers, with one of the answers worth more points. The script writer can design a script such that a different reply message and point value will be given for each of the three answers. Closest includes one response for answers in a predetermined range and one response for answers out of the range. When scoring an answer for a question using the Closest option, variable points are awarded based on distance from the right answer. The closer a viewer's answer is to the correct answer, the more points the viewer receives. For Count Down, there is one message for the right answer and one answer for all others. Variable points are awarded based on the amount of time a viewer takes to input the correct answer. The faster a viewer answers a question, the more points are received.

With the Save Into option, no message is displayed for an answer. Rather, the answer is stored in a register for future use. The threshold option awards points and displays a message when the viewer correctly answers a predetermined number of questions. For example, if the viewer is playing along with Jeopardy and guesses 8 out of 10 questions correctly, the viewer will be awarded points. For In Range

responses, there is one message for answers within a predetermined range and another message for answers outside the range. The predetermined range is programmed by the script writer.

Every script is uniquely identified by a combination of three numbers: mailbox number, group number and unit number. This identification structure is one of the features which allows viewers to switch or surf between programs while ensuring that the handheld 32 maintains the information associated with each interactive program.

An affiliate is the owner and/or producer of a script, who may hire a script writer (or be the script writer) to create a script and who would pay for the air time to broadcast a script. Examples of affiliates include but are not limited to, networks, advertisers, production companies or sporting event organizers.

Handheld 32 stores scores, opinions and other data in memory units called programmer tables. Each affiliate is assigned a number of programmer tables according to that particular affiliate's needs so that no two affiliates can use the same programmer table. The mailbox number is a unique number assigned to each of the affiliate's programmer tables. The authoring system 12 only allows an affiliate to create interactive programs which utilize programmer tables assigned to that affiliate.

The group number assigned to a script identifies the group (or series) of scripts to which the script belongs. This number is stored in the programmer table. For many scripts, one episode is its own group; therefore, the group number assigned to it is unique. However, the interactive system has the capability to combine the scores of a series of scripts. The group number must be the same for each script in the series so that handheld 32 knows which series the script belongs to.

The unit number assigned to a script is important when the script is a part of a series. The unit number must uniquely identify each episode of a series, and is stored within the assigned programmer table. When the script is a stand-alone script (e.g. not part of a series) the unit number is usually set to one. Scripts that are a part of a series have the same group number and preferably mailbox number so that scores from the various games in a series can be accumulated in a single register. Alternatively, multiple programmer tables, each with it's individual mailbox number, can be used with the individual scripts or programs of a series such that the score registers (discussed below) of each programmer table is added together. Each script is differentiated from the others in a series by its unique unit number. When a new script is sent on the VBI, handheld 32 checks the assigned programmer table to determine whether the group number from the previous script is the same or different from the current script. If the group number is the same, the handheld 32 will assume that the current script is a part of a series.

FIGS. 3A-3E are flow charts depicting how the authoring system is used to create a script. Authoring system 12 has a main menu 60 which offers six sub-menus: file menu 62, edit menu 64, script menu 66, system menu 68, window menu 70, and help menu 72.

If a script writer selects the file menu 62, the script writer is given eight options. The script writer can choose to create a "new" file 74, which enables a script writer to create a new script. The script writer can also choose to open an existing script 76. The script writer can save a script 78 if that script has already been saved before. If this is the first time the script writer is saving the script, the script writer would select "save as" 80. Print 82 allows the script writer to print the script file, and print format 84 allows the script writer to



print the script file setting the format. Printer setup 86 allows the script writer to select the printer set-up parameters, and exit 88 allows the script writer to exit the authoring system software.

The edit menu 64 allows the script writer to cut 90, copy 92 or paste 94 text. The system menu 68 allows the script writer to enter script information, for example, the name of a script and author. The script writer can also define pre-stored messages or pre-stored questions, define defaults and name or re-name any variables or registers. Window menu 70 allows the script writer to view quick buttons 96, which are icons that, when selected, perform functions that normally would take more than one action. Help menu 72 includes information about the authoring system 80 and an index 100 to that information.

Script menu 66, described in more detail in FIG. 3B, is chosen when a script writer is creating scripts. The script writer can create a message 102, a question 104, a table 106, a score registration 108, a mini-game 110 or a branching instruction 116. If the script writer chooses to create a message 102, then the script writer is presented with the message window 102 (FIG. 3C) which gives the option of creating/modifying a message 118 or leaving the message window 132. If the script writer chooses to create/modify a message 118, the script writer can enter the frame number 120 for the script, the name of the message 122, and a description of the message 124. The script writer would then enter a message into text box 126, which would be a window having a blank line. The script writer has the "Send To" option 128 with condition 130 to restrict which viewers will receive the message. For example, the script writer can choose to send the script to all viewers who have scored above 700 points or all viewers based on demographic data. If the script writer does not choose any restrictions then every viewer playing along with the script would receive the message.

The script writer has four options when leaving the message window 132. The OK icon 134 saves all of the information that has been entered by the script writer. Alternatively, the script writer can use the cancel icon 136 which returns to the main menu without saving any of the information input by the script writer, or the script writer can delete 138 all information in the message window and return to the main menu 60. The script writer can also choose to select system menu close icon 140, which causes the script writer to exit the authoring system software.

Question window 104 is used when a script writer in the script menu 66 chooses to create a question (FIG. 3D). The script writer has an option to create or modify a question 142 or leave the question window 152. If the script writer chooses to create or modify a question 142, the script writer enters the frame (or time code) information 144 the name of the question 146 and a description of the question 148. The script writer then enters a question into the text box 150. The script writer can choose to restrict the viewers who receive the information 162 and 164 (see discussion with regard to icons 128 and 130 in FIG. 3C). The script writer can leave the question window 152 by selecting the OK icon 154, cancel icon 156, delete icon 158 or system menu close icon 160 (as described with respect to FIG. 3C).

Before leaving the question window, the script writer has the option to set a question characteristic 166 and/or open question response 168.

Setting the question characteristics 166 includes setting the defaults; for example, whether the response typed in by the viewer on handheld 32 should be echoed back, whether any tone should accompany prompts and restricting the amount of time a viewer has to enter a response.

When the script writer chooses the Open Question Response window 168, the script writer is given several alternatives for the response type (FIG. 3E). If the script writer chooses Quick and Easy 170, the script writer must enter the correct answer, the points awarded for the correct answer, the reply displayed on handheld 32 if the viewer selects the correct answer and the reply displayed if the viewer selects the wrong answer.

If the script writer chooses Multiple Replies 172, the script writer enters a set of correct answers, the number of points awarded for each correct answer and messages for each of the correct answers.

If the script writer chooses Closest 174, the script writer enters the correct answer, defines the range of answers in which viewers will score points and determines the maximum amount of points to be awarded. The script writer must also input the text to be displayed by handheld 32 when the viewer inputs an answer in the defined range. Handheld 32 uses a predetermined formula for allocating points for answers inside the defined range. For example, if the correct answer is 50, the acceptable range of answers is 30 to 70, and a viewer guesses 40, then the viewer would be off by 50% and would only receive 50% of the maximum allowed points.

$$\frac{\text{correct answer} - \text{viewer's answer}}{\text{correct answer} - \text{range limit}} \times 100\% = \frac{50 - 40}{50 - 30} \times 100\% = 50\%$$

Alternatively, scoring could be allocated using a bell curve.

If the script writer selects Count Down 176, the script writer enters the correct answer, the maximum number of points possible, the answer time interval and the number of points to decrement per time interval. After the viewer is presented with a question, the clock in handheld 32 begins to run. At every time interval, it subtracts the number of points designated by the script writer from the maximum number of points. For example, if the maximum number of points was 100, the time interval is 5 seconds, the points to subtract per interval is 10 points, and the viewer entered the correct answer in 32 seconds; then the viewer would be awarded 40 points.

If the script writer chooses Save Into 178, the script writer chooses the register (any one of SAVE1-SAVE7, to be discussed below) which will store the viewer's response.

If the script writer chooses Threshold 180, the script writer enters the threshold goal which is the number of correct answers that a viewer must achieve, and the point value for reaching the threshold goal. Additionally, the script writer can enter text to be displayed by handheld 32 informing the viewer whether the threshold was reached.

If the script writer chooses In Range 182, the script writer enters the low limit of the range and the high limit of the range of acceptable answers. Additionally, the script writer enters the point value and a message for answering within the range of acceptable answers.

Looking back at FIG. 3B, another option from the script menu is a table 106. A table is text information, like a message. However, a message is displayed immediately and a table is stored in the memory of handheld 32. A viewer must use a key to get the information in a table. A key is a password learned by answering a correct question, watching a television program, reading a newspaper, or any other incentive an affiliate or advertiser might have. A viewer would enter the password into handheld 32 which would trigger the display of the message from the table. The table is likely to include some type of valuable information.

The script writer could chose score registration 108, which allows the script writer to send a message to the screen of handheld 32 indicating to the viewer that his or her score has met certain thresholds and that they should call operations 34 to register their score for a prize. The viewer's score may also be stored for long range storage in the memory of handheld 32.

Script menu 66 also allows for branching 116, which is similar to branching in other types of computer programs.

From script menu 66 the script writer can select mini-games 110, which allows the script writer to create questions, answers and messages for use in a mini-game (described above).

When designing any of the scripts described above, the script writer has the option of entering in the frame number or other timing information to be used for transmitting the corresponding transaction to handheld 32.

Once an interactive program is compiled, the object code created must be communicated to data insertion control 14. The means for transmitting object code to data insertion control 14 includes hand carrying by disk, using a computer network with appropriate software, communication over telephone lines, a wire, or authoring system 12 and data insertion control 14 can share the same hardware.

### III. Data Insertion System

In the preferred embodiment, data insertion control 14 is a windows application at least partially implemented using a high level programming language; for example, C. The windows application acts as control software for Insertion Card 20. The Insertion Card interface, however, is defined in terms of low level messages along with a framing structure and communications protocol. Thus, device driver 18 is needed to translate between these two environments.

Device driver 18 requirements are defined in terms of required functions and general operations. There are four required functions that device driver 18 must perform. First, device driver 18 functions need to be made available to windows applications. This is accomplished by creating a library of linkable C functions. Second, interrupt handling routines must be installed to handle the transmit and receive interrupts associated with DMA transfers to and from Insertion Card 20. Third, DMA transfer to and from Insertion Card 20 must be initialized. Fourth, downloadable firmware must be sent to Insertion Card 20.

FIG. 4 shows the hardware architecture for Insertion Card 20, which uses standard VBI insertion technology known in the art. It consists of a video processing circuitry, a video signal processor, a control processor, hardware failure detection circuitry and an IBM PC AT bus interface.

Composite Video In 228 is first sent to hardware bypass 240. Should the hardware on Insertion Card 20 fail, Insertion Card 20 can be bypassed by properly switching hardware bypass 240 and 282, sending Composite Video In 228 directly to hardware bypass 282 and exiting as Composite Video Out 230. Normally, however, bypass 240 sends signal 228 to video clamp 242.

Video processing circuitry is provided on Insertion Card 20 to slice data from the VBI and to insert data into the VBI. The data inserted into the VBI is the transaction data. Insertion Card 20 slices data from the VBI in order to monitor and validate data already existing in the VBI. For example, if a television program has been recorded on a videotape or other recording medium and there is data in the VBI, Insertion Card 20 can slice the data (e.g. read the data) in order to determine if the data is valid interactive data. If so, the Insertion Card could add a new valid stamp and/or time stamp (discussed below) to the date in order to ensure proper handling by handheld 32.

Composite Video In 228 is accepted at the video input and referenced to a known DC signal at video clamp 242. The output of video clamp 242 is sent to three places. The first place, is the data slicing path where the output of video clamp 242 is sent to an Analog to Digital Converter 250 and stored in FIFO 252. Video processor 268 then removes the VBI data from FIFO 252 in a non-real-time manner.

The output of video clamp 242 is also presented to a sync separator 244 and sync generator 246 which together extract horizontal and vertical sync information used by video processor 268 for timing purposes. A synchronized composite black video can be created for testing purposes.

The output of video clamp 242 is also AC coupled and sent to video mux 248. This path is used to allow the television program portion of the signal to pass through Insertion Card 20.

Data is inserted into the VBI using both video processor 268 and control processor 266. Two processors are used on Insertion Card 20 to increase performance. Video processor 268 is used to process the data that is inserted into the VBI. Control processor 266 performs all other functions, including sending commands to video processor 268. Thus, RAM 270 can hold slightly more than one transaction of data, while RAM 254 can hold many transactions plus other data. In the preferred embodiment, the control processor 266 is a Motorola 68HC16 and the video processor is a Texas Instrument TMS 32052. Additionally, control processor 266 has ROM 256 for storing control software.

In communication with control processor 266 is a DMA controller 258 which sends the proper handshaking and control signals to the IBM PC/AT bus interface 264. Data is sent from Insertion Card 20 on the transmit DMA channel from FIFO 262. Data is received from the receive DMA channel into FIFO 260. Via the DMA channel, insertion control 14 controls Insertion Card 20. Insertion control 14 determines when to send data, and what data to send. Insertion control 14 creates all the header information and data formatting (described below). Furthermore, insertion control 14 is responsible for the manipulation of data; for example, encrypting, interleaving, error codes and other data manipulation.

When data insertion control 14 commands Insertion Card 20 to send data on the VBI, the data is received in FIFO 260 and sent to control processor 266 which can add a valid stamp, and a time stamp based on Real Time Clock (RTC) 267. The data is then sent to video processor 268 where it is prepared for insertion into the VBI. Video processor 268 uses the sync information from sync separator 244 and sync generator 246 as timing information. The VBI data is then placed in FIFO 274. From FIFO 274 the data is digitized at A/D converter 276 and sent through low pass filter 278, and on to video mux 248.

The VBI is only a small portion of the video signal (see discussion below about VBI). Therefore, when data is being inserted into the VBI the video mux is selecting Composite Video for a majority of the time. During the portions of the Composite Video that constitute the VBI, video mux 248 selects VBI data, which is the output of low pass filter 278.

The control processor 266 is responsible for supporting downloadable code, video signal processor setup, all VBI commands and other general functions. The control processor 266 passes all received messages and formats all outgoing messages. It is also responsible for transaction framing/synchronization, FEC coding, time stamping and validation.

### IV. Data Transmission

Data inserted by Insertion Card 20 must be in a format that conforms to existing television signals. Picture scan for



a cathode ray tube television display is generally from left to right and top to bottom consisting of 525 horizontal lines per frame and 30 frames per second. Each frame is divided into two alternating fields: odd field and even field. Referring to FIG. 5, beginning at the upper left-hand corner of television screen 291 is line 22, followed by line 23, line 24, line 26, . . . line 261. This is the odd field. After line 261, the cathode ray beam then travels back to the top of the picture. The period of time while the beam is traveling back to the top of the picture is called the vertical blanking interval (or VBI). This is not an instantaneous bottom to top jump but actually requires the same length of time as 21 lines. These lines (the VBI) are numbered 262 to 282. The even field then begins with the second half of line 284, then line 285 . . . line 524. After line 524, the beam then travels back to the top of the picture during the vertical blanking interval. This vertical blanking interval is represented by lines 1-21.

FIG. 6 shows a time line 290 for the different lines of information in the video signal. The odd field vertical blanking interval is represented by 290A which includes lines 1-21. Following VBI 290A is odd field 290B consisting of lines 22 through 261. After odd field 290B, the beam travels back to the top of screen 291, during which is the even VBI 290C, lines 262 to 282. After even VBI 290C, the even field of data occurs 290D which includes lines 284 to 525. Each field of data (e.g. odd or even) and its accompanying VBI is  $\frac{1}{60}$ th of a second.

Odd vertical blanking interval 290A is broken out in FIG. 6 on line 294. The VBI includes vertical sync 294A which occupies lines 1-9, followed by the data lines 294B which occupy lines 10-21. The vertical sync 294A indicates the beginning of a vertical field, thus, signaling the need for the cathode ray beam to return scan to the upper left hand corner of the screen. Line 12 is broken out in more detail and shown as 300.

Any conventional data format for a line of data is acceptable with the understanding that the data may be inserted on blank lines within the vertical blanking interval. One format for data transmitted within the VBI that is both well documented and considered to be reliable is the format chosen for closed captioning. This format transmits a horizontal synchronization pulse 306, a color burst signal 308, a clock run-in signal 310, and a burst of data 302 which is preceded by a start bit 304. The data 302 includes fourteen bits of data and two parity bits. The horizontal sync pulse 306 is included in every line of data to signal the beginning of a line of data or, in other words, signaling a retrace by one line. Color burst 308 provides information needed to decode color. Each burst of data 302 is repeated at a rate of 16.67 milliseconds (as seen in FIG. 7). Data may be inserted on any of the lines of the VBI between line 10 and line 21.

FIG. 8 shows the structure of the data that is sent on the VBI lines. Data insertion control 14 assembles the data into this format before inserting the data into the VBI. The data consists of a yellow signal 320, a synchronization pattern 322, header information 324, time stamp 326, transaction parameters 328, and transaction data 330.

The yellow signal 320 is used to flag the beginning of a framed transaction and is used by Insertion Card 20 to avoid transaction collisions. It currently consists of two words of all 1's.

The synchronization pattern 322 is used to synchronize the start of a transaction. The synchronization pattern 322 is currently defined as: 11111001, 10101110, 00000110, 01010001, 10001010, 01100000, 01110101, 10011111.

Header 324 consists of a source address, destination address, affiliate number, VBI line number and transaction

size. The source address is the address of the device that is generating the original data. The destination address is the address of the type of device that is receiving the data (e.g. handheld 32).

Time stamp 326 is inserted into the interactive data by Insertion Card 20, at the direction of data insertion control 14, at the time of transmission. The time stamp, which identifies the time that the data was transmitted by the Insertion Card 20, is used to protect against cheating during an interactive program where prizes may be awarded.

Parameters 328 include, but are not limited to, segment number, transaction number, game skill level, a validation stamp, time stamp enable, group number, unit number, mailbox number and other parameters associated with presenting transactions. Time stamp enable toggles the time stamp security system on and off. The validation stamp is used to distinguish valid interactive data from other data.

In order to provide efficient and reliable transmission on the VBI, interactive data can be muxed, FEC coded, interleaved, combined, encrypted and error corrected. The data muxing function packs input items of various bit lengths into an integer number of bytes. Zero fill is used and items are combined most significant bit first. For example, if the source address is Aaaaaaaaaa, the mailbox number is Bbbbbbbbbb and the destination address is Cccc; then byte 1 could be Aaaaaaaaaa, byte 2 could be aBbbbbbb, and byte 3 could be bbbbCccc.

The FEC coding function accepts an integer number of bytes and outputs an integer number of FEC codewords based on the FEC coding scheme being used. The preferred embodiment uses a rate of three-fourths code with a code word length of 32 bits.

The interleaving function accepts an integer number of FEC code words and outputs an integer number of interleaved blocks. An interleaved block consists of 8 code words where 8 is the interleave factor. Zero fill is used if less than 8 code words are interleaved. For example, the following 8 code words could be interleaved as follows:

```
code word 1: AaaaaaaaaBbbbbbbCccccccPpppppp
code word 2: DddddddEeeeeeeFffffffPpppppp
code word 3: GggggggHhhhhhIiiiiiiPpppppp
code word 4: JjjjjjKkkkkkLlllllPpppppp
code word 5: MmmmmmmNnnnnnnOooooooPpppppppp
code word 6: QqqqqqRrrrrrSssssssPppppppp
code word 7: TtttttUuuuuuuVvvvvvvPppppppp
code word 8: WwwwwwwXxxxxxxYyyyyyyPppppppp
```

After interleaving:

```
code word 1: ADGJMQTWadgjmqtwadgjmqtwadgjmqt
code word 2: adgjmqtwadgjmqtwadgjmqtwadgjmqt
code word 3: BEHKNRUXbehknruxbehknruxbehknrux
code word 4: behknruxbehknruxbehknruxbehknrux
code word 5: CFILOSVYcfilosvycfilosvycfilosvy
code word 6: cfilosvycfilosvycfilosvycfilosvy
code word 7: PPPPPPPpppppppppppppppppppppppp
code word 8: ppppppppppppppppppppppppppppppp
```

The data combining function combines data by appending one input to another. The encryption function accepts an integer number of bytes and outputs an integer number of encrypted blocks. The encrypted block is defined by the specific encryption algorithm being used. Currently, an encryption block is 8 bytes. Zero fill is used.

The CRC generation function accepts an integer number of bytes and calculates a 16-bit check word. A CRC algorithm is used to implement the following polynomial:  $x^{16} + x^{12} + x^5 + 1$ . Furthermore, Insertion Card 20 includes a select module (not shown) to determine on which VBI line to send the data.

## V. Settop Device

Data is recovered from the VBI, by settop device 28, at a sample rate of 500,000 bits per second. However, this rate occurs for a short burst during the vertical blanking interval. A specific line of data only occurs every 16.7 milliseconds, thus, the data stream consists of 14 bits clocked at a high rate followed by 16.7 milliseconds of no data. As shown in FIG. 7, the 14 bits are transmitted within 4.7 milliseconds. The purpose of settop device 28 is to recover this data transmitted during the VBI at a high data rate and, using infrared transmission, send that information to handheld 32 at a much slower data rate of 4,900 bits per second. This task can be accomplished generally using a buffer or memory device with different clock rates for input and output.

FIG. 9 depicts a more detailed representation of settop device 28, which is similar to a conventional decoder for decoding VBI information used, for example, for closed caption applications. Settop device 28 includes a buffer 353 for receiving the video signal and a sync separator 354. This sync separator 354 extracts the synchronizing information (H Sync and V Sync: which are the horizontal sync and vertical sync discussed above) from the video signal and sends them to microprocessor 358. The stripped video signal which is the output of sync separator 354, labeled V-signal, is sent to data slicer 356. Data slicer 356 digitizes the signal and sends the digitized signal to microprocessor 358. Connected to microprocessor 358 is ROM and RAM memory unit 360, which is used to store control code and data.

Microprocessor 358 is connected to a clock (not shown). The clock includes a divider circuit so that two clock signals are available. The two clock signals have different frequencies which enable the settop device 28 to read data in at one speed and send data out at another speed. Microprocessor 358 is powered by power regulator 368. The output of microprocessor 358 goes to infrared transmitter 364.

In operation, data is received as part of a video signal, sync information is stripped from the video signal and the transaction information is removed from the video signal, by microprocessor 358, using the sync information. Additionally, microprocessor 358 deinterleaves and decodes the data and stores the data in RAM 360. RAM 360 could be any memory device known in the art. The data is then clocked out of RAM 360 at a data rate of 4,900 bits per second where it is sent to IR transmitter 364 and transmitted to handheld 32.

## VI. Handheld

Handheld 32, shown in FIG. 10, provides the means for participating in the interactive program. Handheld 32 receives a data stream from settop device 28 and implements/presents the interactive program. The data stream received by handheld 32 includes commands and event specific data.

The data stream is received first by an IR detector 380 which senses the infrared signal from settop device 28. The signal received by IR detector 380 is sent to a 44 KHz demodulator 382 which removes the infrared carrier frequency, leaving a serial data stream. The serial data stream is sent to an 8-bit shift register 386 which converts the serial data stream to parallel data for microprocessor 388. The data sent to microprocessor 388 is stored in RAM 390 until a full transaction is received. At that time, microprocessor 388, which communicates with real time clock (RTC) 389, builds a sequence of commands and data which are used to present the transaction.

ROM and RAM 390 of microprocessor 388 contain a control program and a command interpreter for the commands sent on the VBI. The RAM portion stores the data and

commands transmitted over the IR link. The preferred microprocessor 388 is an embedded processor, on an ASIC, similar to a Rockwell 65C02. In communication with microprocessor 388 is a secure microprocessor 392. The preferred secure microprocessor is Motorola 68HC05SC27. Secured microprocessor 392 allows data to be stored in a tamper proof manner, unaccessible to unauthorized personnel. Handheld 32 further includes a keyboard 394. A buzzer 396 is included to alert the viewer, for example, when the viewer's answer is correct or that handheld 32 is awaiting a response. Handheld 32 further includes an LCD display 398, which is a 4-line by 16-character display. LCD display 398, in the preferred embodiment, shall conform to the features of the Sharp LM24255 (pre-programmed character generator ROM and 8-character generator RAM locations). To extend battery life, the LCD power should be controlled by an I/O bit from the microprocessor 388. Also connected to microprocessor 388 is Infrared Transmitter 393 which communicates with dialer 33.

Handheld 32 is powered by 6-volt battery 400 which is preferably 4 AA cells. There can be an additional lithium cell (not shown) that powers the ROM and RAM 390, and secure microprocessor 392 when loss of main power is detected since these must remain powered at all times. Main power is lost when the 6-volt battery 400 is drained below minimum working voltage or removed entirely.

FIG. 11 shows an example of handheld 32. Case 420 is made from molded plastic of a strength and texture suitable for use by viewers in a household environment. Keypad 394 should be molded rubber with carbon contacts that make switch connections against a switch pattern on a printed circuit board. The buttons on keypad 394 could be marked with numbers and/or words. The words could include, but are not limited to "yes", "no", "true", "false", "poor", "fair", "average", "good", "excellent", "info" and "dialer". The "info" button is used to access tables. The "dialer" button is used to communicate with dialer 33. On the front 422 of handheld 32, is a window of red tinted plastic that filters visible light and receives infrared data. The IR receive circuitry will be mounted on a PC board behind this windows.

As discussed above, handheld 32 receives all remote data from settop device 28 via an infrared data link. The performance of this link should have a bit-error rate of less than 1-error for every 100,000 bits transmitted (random bit errors) when in the configuration shown in FIG. 12. In this configuration, handheld 32 should preferably be within 7.6 meters (25 feet) from the transmitter of settop device 28 and anywhere within plus or minus 60° of the central line of the transmitter.

The features of an interactive program are implemented in part in software resident in handheld 32. This software performs two functions. The first function is to build a transaction from high level commands transmitted via the IR link. The second function is the execution/presentation of the transaction. During the time that a participant is responding to a given transaction, the next transaction is being received and made ready for the participant to process. Using this approach, the amount of information transmitted prior to a viewer being able to use handheld 32 is essentially transparent to the viewer compared to other interactive devices.

Timed responses where the participant must react within a specific time interval can be controlled by either microprocessor 388 in conjunction with real time clock 389, or via a new transaction being sent and activated before the participant enters responses to the prior question.

The interactive system can use encryption algorithms and keys as is known in the trade. Handheld 32 would thus store, for example, three keys at least one of which could be reprogrammed by a signal sent on the VBI.

#### VII. Handheld Memory

FIG. 13 shows the memory map for microprocessor 388 and secure microprocessor 392. With regard to microprocessor 388, memory location 000-001F (450) is used to map the I/O devices, e.g. keyboard, display, buzzer. Memory locations 0020-7FFF (452) is used as RAM to store programmer tables and other data. Locations D800-FFFF (454) is used as ROM.

With respect to the secured microprocessor, memory location 000-001F (456) is used to map the I/O devices. Locations 0020-00FF (458) is RAM. Locations 0530-10FF (460) is an EEPROM used to store programmer tables. Locations 4000-7FFF (462) is ROM used to store control information.

The interactive system stores data in handheld 32 in registers within programmer tables. Every affiliate has one or more assigned programmer tables so that handheld 32 knows where to store the information specific to that affiliate's interactive program. Additionally, handheld 32 has two universal registers used by all affiliates. One universal register is the Input Register, for temporarily storing viewer's answers to questions. For example, in a multiple choice question, if the viewer enters "4", the Input Register is loaded with a "4". The input register is automatically updated after each question. There is only one input register for each handheld 32. The second universal register is the Points Register, which stores the points earned for entering the correct response to a single question. For example, in a multiple choice question, the correct answer of "4" may earn 25 points. Therefore the value in Points Register would be 25.

FIG. 14 is a block diagram of a programmer table. There are fifteen registers per programmer table. Of the fifteen registers, eight have specific functions and seven are general. The eight specific registers are the Mailbox Register 470, Group Register 474, Unit Register 478, Score Register 482, Cume Register 484, Bank Register 500, Segment/Transaction Register 502 and Status Register 504.

The Mailbox Register 470 stores the mailbox number. Affiliates can purchase (or be assigned) the exclusive rights to one or more programmer tables. The Group Register 474 stores the group number for the current transaction. The Unit Register 478 stores the unit number for the current transaction. The Segment/Transaction Register 502 stores the segment and transaction number for the current transaction. Status Register 504 holds the status for the current transaction, which includes the cheater bit. Initially, the cheater bit would be reset to zero. If, during the course of an interactive program, the viewer attempts to cheat, the cheater bit would be set to 1. Once the cheater bit is set to 1, the Cume Register 484 is frozen.

Score Register 482 stores the score for one program. For example, if the score for one game of a series is 225 points, the Score Register would have 225. Score Register 482 is automatically updated by the value in the Points Register after a correct answer is scored. Cume Register 484 stores cumulative scores for a series of programs as identified by the group number. The series may be one or more episodes. Using the example described above with respect to the score register, if the second game score is 275, the cume register could be 500, being the addition of game one (225) and game two (275) of the series. The cume register is automatically updated by the value in the Points Register 480 after every correct answer.

Bank Register 500 stores the accumulated points earned within a mini-game, without updating the Score or Cume Registers. At the end of a mini-game, the script writer has the programming option to add Bank Register 500 to Score Register 483 and Cume Register 484, or to save the contents of Bank Register 500 for later use. For example, the script writer can use the value within Bank Register 500 for another mini-game without adding it to the viewer's Score and Cume Registers. Mailbox Register 470, Affiliate Register 472, Group Register 474, Unit Register 478, Points Register 480, Score Register 482, Cume Register 484, Bank Register 500, Segment/Transaction Register 502 and Status Register 504 are all updated by handheld 32.

Registers Save 1-Save 7 (486, 488, 490, 492, 494, 496, 498), are general purpose registers used by the script writer to store data, for example, input assigned by the programmer with the Save Into response option. These registers can store viewer input for later use or text that a script writer wants to display in a message or question. A script writer may want to ask a question, store a viewer's answers in a register, and then use the stored answer for a branching condition. For example, the interactive program may have a question asking which team will win the game, San Francisco Giants or Atlanta Braves? The script writer could then choose the Save Into response option which causes, for example, a 1 to be stored in Save2 488 if the viewer selected the San Francisco Giants, or a 2 to be stored in Save2 488 if the viewer selected the Atlanta Braves. The script would include a branching instruction so that if Save2 contained a one, the message on handheld display 398 would be "The Giants are great hitters, watch for home runs!" Or, if Save2 contained a 2, the message on display 398 would be, "The Braves have great pitching, watch for a low scoring game!"

For every question created in the authoring system for which points are awarded to viewers, handheld 32 usually updates at least four registers. The following example, using FIG. 15, demonstrates what is stored in various registers after asking a yes/no question. In row 510, a 25 point yes/no question is asked, "Do lions hibernate?" Handheld 32 displays the question and then waits for the viewer to enter an answer. The viewer's input will be stored in the Input Register. If the viewer enters the correct answer, 25 points will be loaded into the Points Register 480. For purposes of this example, this script is the second game of a series (since the first game ended with a score of 500, the Cume Register 484 is equal to the Score Register 482 plus 500) and the viewer's current score is 75 (thus, Score Register 482=75 and Cume Register=575). Row 512 occurs when the viewer enters a 1 representing a yes, which is the wrong answer. Handheld 32 displays the message, "No, lions live in warm climates and have no need to hibernate." Since the wrong answer was selected, no points are earned. Thus, the score and cume registers are not incremented. Row 514 represents when the viewer enters a 2, representing a "no" which is the correct answer; therefore, handheld 32 will display the message, "Right! 25 pts." The Points Register 480 is loaded with 25. The Score Register 482 is then updated by the addition of the Points Register 484. The equation is new Score Register value=old Score Register value plus Points Register. In this case, Score Register=75 pts.+25 pts.=100 pts. The Cume Register 484 is similarly updated by the addition of 25 pts.

In summary, handheld 32 displays a question and then waits for the viewer to enter an answer. The answer is stored in the input register. Handheld 32 then updates the other registers based upon the values stored in the input register. After the registers are updated, new transactions can be presented to the viewer.

Table 1 shows a partial memory allocation for handheld 32. As described above, information is stored in the handheld 32 in programmer tables. There are three types of programmer tables: secured programmer tables, unsecured programmer tables and event specific programmer tables. Unsecured programmer tables have all of the information stored in RAM 390. Secured programmer tables have some of the information stored in RAM 390 and some of the information stored in an EEPROM inside secure microprocessor 392. An event programmer table has some information stored in RAM 390 and some information stored in the EEPROM. Secured programmer tables are programmer tables with registers that cannot be accessed or tampered with by a viewer attempting to cheat. When interactive programs award prizes of value, a programmer may want to use a secured programmer table to prevent tampering or cheating. If the game is played without any incentive for cheating, for example no prizes, an unsecured programmer table could be used.

As described above, programmer tables are assigned to affiliates. For example, they could be sold on a per programmer table basis. Thus, a given affiliate may buy five or ten programmer tables to use for all of its interactive programs. However, there may be an occasion where an affiliate needs to use to a programmer table for a particular interactive program but has no programmer tables available in its own set of prepurchased tables. Or, a first time viewer may want to try an interactive program on an incremental basis. Thus, an affiliate can buy an event programmer table which is a programmer table available only for one particular event. The most useful function for event specific programmer tables is in conjunction with pay-per-play events. For example, a viewer might be given the opportunity to buy the right to participate in a pay-per-play interactive program in conjunction with a pay-per-view boxing match. In this situation, the viewer would order the pay-per-play event and receive an access code to activate the specific event programmer table, which enables the viewer to participate in the pay-per-play interactive program.

Table 1 shows the preferred maximum number and allocation of the three types of programmer tables with respect to RAM 390 and the EEPROM inside secure microprocessor 392. The column labeled "EE Bytes" represents bytes of data stored in the EEPROM of secured microprocessor 392. The column labeled "RAM Bytes" represents bytes of data stored in RAM 390. In the preferred embodiment, there are 204 secured programmer tables, there are 182 unsecured programmer tables and 20 event tables.

For example, Table 1 shows that there are 204 secured programmer tables, with each programmer table having a Group Register which is 10 bits wide. Therefore, 255 bytes of the EEPROM in secured microprocessor 392 are used for secured programmer table Group Registers.

TABLE 1

| Purpose                | Quantity | Size     | RAM Bytes | EE Bytes |
|------------------------|----------|----------|-----------|----------|
| <u>Secured Tables:</u> |          |          |           |          |
| Group #                | 204      | 10 bits  |           | 255      |
| Unit #                 | 204      | 4 bits   |           | 102      |
| Mailbox #              | 204      | 14 bits  |           | 357      |
| Score                  | 204      | 3 Bytes  |           | 612      |
| Cume                   | 204      | 3 Bytes  |           | 612      |
| Save 1-7               | 204      | 21 Bytes | 4284      |          |
| Bank                   | 204      | 3 Bytes  |           | 612      |

TABLE 1-continued

| Purpose                  | Quantity | Size     | RAM Bytes | EE Bytes |
|--------------------------|----------|----------|-----------|----------|
| Status                   | 204      | 1 Byte   |           | 204      |
| Seg/Trans                | 204      | 3 Bytes  | 612       |          |
| <u>Unsecured Tables:</u> |          |          |           |          |
| Group #                  | 182      | 10 bits  | 228       |          |
| Unit #                   | 182      | 4 bits   | 91        |          |
| Mailbox #                | 182      | 14 bits  | 319       |          |
| Score                    | 182      | 3 Bytes  | 546       |          |
| Cume                     | 182      | 3 Bytes  | 546       |          |
| Save 1-7                 | 182      | 21 Bytes | 3822      |          |
| Bank                     | 182      | 3 Bytes  | 546       |          |
| Status                   | 182      | 1 Byte   | 182       |          |
| Seg/Trans                | 182      | 3 Bytes  | 546       |          |
| <u>Event Tables:</u>     |          |          |           |          |
| Group #                  | 20       | 10 bits  |           | 25       |
| Unit #                   | 20       | 4 bits   |           | 10       |
| Mailbox #                | 20       | 14 bits  |           | 35       |
| Score                    | 20       | 3 Bytes  |           | 60       |
| Cume                     | 20       | 3 Bytes  |           | 60       |
| Save 1-7                 | 20       | 21 Bytes | 420       |          |
| Bank                     | 20       | 3 Bytes  |           | 60       |
| Status                   | 20       | 1 Byte   |           | 20       |
| Seg/Trans                | 20       | 3 Bytes  | 60        |          |

### VIII. Handheld Sequencing

Handheld 32 uses the mailbox number, group number, unit number, segment number, transaction number, time stamp enable and cheater bit in order to ensure that the viewer is playing the transactions in the proper sequence. Sequence is important for two reasons. First, monitoring the sequence of transactions can be used to detect cheating. Second, if for any reason a transaction is missed by handheld 32 (e.g., data loss or a viewer was surfing or grazing) it is desired that handheld 32 not continue processing transactions in that segment. For example, if the question in a sequence of question-answer-scoring is missed, handheld 32 should not wait for the response because the viewer does not know that handheld 32 is waiting for an answer, nor would there be an answer to score. Handheld 32 should remain idle until the start of the next sequence.

The following examples help describe how handheld 32 sequences through an interactive program and updates the appropriate registers. Most of the examples have two columns followed by an explanation. The left column is certain data associated with a new transaction as compared to the previous transaction. The right column shows the effect that the data in the left column has on a programmer table.

#### EXAMPLE 1

|           |      |               |         |
|-----------|------|---------------|---------|
| Mailbox # | Same | Score =       | Updated |
| Group #   | Same | Cume =        | Updated |
| Unit #    | Same | Save1-Save7 = | Updated |
|           |      | CB =          | Same    |

In this first example, the transaction data is referencing the same Mailbox Number, Affiliate Number, Group Number, and Unit Number as the previous transaction. Therefore, this transaction will use the same programmer table as the previous transaction. The current transaction is the next transaction in the same game as the previous transaction. Thus, the programmer table is maintained and updated accordingly.

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## EXAMPLE 2

|                   |            |
|-------------------|------------|
| Mailbox #         | Different  |
| Group #           | Don't Care |
| Unit #            | Don't Care |
| Segment #         | Don't Care |
| Transaction #     | Don't Care |
| Time Stamp Enable | Don't Care |

This transaction has a different Mailbox Number than the previous transaction; therefore, handheld 32 uses a different programmer table.

## EXAMPLE 3

|           |           |             |   |
|-----------|-----------|-------------|---|
| Mailbox # | Same      | Score =     | 0 |
| Group #   | Different | Cume =      | 0 |
| Unit #    | Same      | Sav1-Sav7 = | 0 |
|           |           | CB =        | 0 |

In this situation, handheld 32 is using the same programmer table; however, a new interactive program (or series) is starting due to the new group number. Since the new transaction is part of a new series, the Score, Cume, Point and Save Registers are reset to zero and then updated with the scores from the new transaction.

## EXAMPLE 4

|           |           |             |   |
|-----------|-----------|-------------|---|
| Mailbox # | Same      | Score =     | 0 |
| Group #   | Different | Cume =      | 0 |
| Unit #    | Different | Sav1-Sav7 = | 0 |
|           |           | CB =        | 0 |

As in the previous example, a new program or series is starting that uses the same programmer table as the previous transaction.

## EXAMPLE 5

|           |           |             |         |
|-----------|-----------|-------------|---------|
| Mailbox # | Same      | Score =     | 0       |
| Group #   | Same      | Cume =      | Updated |
| Unit #    | Different | Sav1-Sav7 = | Updated |
|           |           | CB =        | Same    |

This is an example where the new transaction is using the same programmer table and is part of same series as the previous transaction, but has a different unit number. Thus, the new transaction is the next game in the series. For example, it may be a new game in the World Series. Thus, handheld 32 should zero out the Points and Score Registers but maintain the Cume Register.

## EXAMPLE 6

|                   |                   |             |      |
|-------------------|-------------------|-------------|------|
| Mailbox #         | Same              | Score =     | Same |
| Group #           | Same              | Cume =      | Same |
| Unit #            | Same              | Sav1-Sav7 = | Same |
| Segment #         | Backward Sequence | CB =        | Same |
| Transaction #     | ! = 1             |             |      |
| Time Stamp Enable | True              |             |      |

In this example, the segment number has changed but in backwards sequence. For example, handheld 32 was pro-

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cessing segment 7; however, the new transaction is from segment 5. Since the transaction number is not equal to 1, handheld 32 is receiving this transaction in the middle of a sequence. This may be an example of a viewer who taped a portion of an interactive program and is attempting to replay part of the program. Thus, handheld 32 will ignore this transaction, and wait for the beginning of the next sequence. Ignoring the transaction includes not presenting the transaction and not updating any programmer tables. Therefore, the programmer table will not be updated with the new sequence number; thus, the next transaction received by handheld 32 is also likely to be out of sequence. The next transaction with a transaction number of 1 is likely to be analogous to Example 8.

## EXAMPLE 7

|                   |                   |             |         |
|-------------------|-------------------|-------------|---------|
| Mailbox #         | Same              | Cume =      | Frozen  |
| Group #           | Same              | Score =     | 0       |
| Unit #            | Same              | Sav1-Sav7 = | Updated |
| Segment #         | Backward Sequence | CB =        | 1       |
| Transaction #     | 1                 |             |         |
| Time Stamp Enable | True              |             |         |

This situation is similar to the previous example except the transaction number is 1. Therefore, handheld 32 would conclude that the transaction is at the beginning of a segment and the segment is out of order. Handheld 32 assumes that the viewer is cheating by taping the interactive program and replaying it. Therefore, the cheater bit is set to 1 which freezes the Cume Register 484. Points Register 480 and Score Register 482 are reset to zero. The transaction is played without effecting the cumulative score.

## EXAMPLE 8

|                   |                   |             |   |
|-------------------|-------------------|-------------|---|
| Mailbox #         | Same              | Score =     | 0 |
| Group #           | Same              | Cume =      | 0 |
| Unit #            | Same              | Sav1-Sav7 = | 0 |
| Segment #         | Backward Sequence | CB =        | 0 |
| Transaction #     | 1                 |             |   |
| Time Stamp Enable | False             |             |   |

This situation is the same as the previous situation, however, the time stamp enable is false. Therefore, even though the viewer is playing out of sequence, Cume Register 484 will not be frozen. Rather, handheld 32 resets the registers and allows the viewer to restart the game. This situation would arise in a children's video or another interactive program where prizes are not awarded and/or cheating is not relevant.

## EXAMPLE 9

|                   |                  |             |      |
|-------------------|------------------|-------------|------|
| Mailbox #         | Same             | Score =     | Same |
| Group #           | Same             | Cume =      | Same |
| Unit #            | Same             | Sav1-Sav7 = | Same |
| Segment #         | Pwd. out of seq. | CB =        | Same |
| Transaction #     | ! = 1            |             |      |
| Time Stamp Enable | True             |             |      |

In this situation, the segment number is out of order, and the new transaction is not the first transaction of the segment. Therefore, the viewer is trying to play a segment by entering in the middle of the segment. This transaction may be a response; however, no question was queried to the

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viewer. Handheld 32 does not present this transaction to the viewer. Handheld 32 will remain idle (from the viewer's point of view) until the beginning of the next segment, where handheld 32 will start presenting transactions to the viewer (see Example 11). This may be the situation where the viewer was initially participating in the interactive game, but temporarily stopped. Perhaps the viewer momentarily changed television channels or stepped away from the television viewing area (e.g. bathroom break). Although the viewer can continue participating, the viewer loses out by losing the potential scoring from the missed transactions.

## EXAMPLE 10

|                   |                  |             |         |
|-------------------|------------------|-------------|---------|
| Mailbox #         | Same             | Score =     | Updated |
| Group #           | Same             | Cume =      | Updated |
| Unit #            | Same             | Sav1-Sav7 = | Updated |
| Segment #         | Pwd. out of seq. | CB =        | Same    |
| Transaction #     | 1                |             |         |
| Time Stamp Enable | True             |             |         |

This situation is similar to Example 10 except that the transaction number is 1. Therefore, the viewer has missed some transactions and is now at the beginning of a new segment. Since the transaction is at the beginning of a segment, handheld 32 allows the viewer to play the transaction and, appropriately updates the Score and Cume Registers. As in Example 10, the viewer does not receive any scoring from the missed transactions.

## EXAMPLE 11

|                   |               |             |         |
|-------------------|---------------|-------------|---------|
| Mailbox #         | Same          | Score =     | Updated |
| Group #           | Same          | Cume =      | Updated |
| Unit #            | Same          | Sav1-Sav7 = | Updated |
| Segment #         | Same          | CB =        | Same    |
| Transaction #     | In sequence   |             |         |
| Time Stamp Enable | True or False |             |         |

This situation is the norm. The viewer is playing the next transaction in the same segment and all the registers are appropriately updated.

## EXAMPLE 12

|                   |                 |             |      |
|-------------------|-----------------|-------------|------|
| Mailbox #         | Same            | Score =     | Same |
| Group #           | Same            | Cume =      | Same |
| Unit #            | Same            | Sav1-Sav7 = | Same |
| Segment #         | Same            | CB =        | Same |
| Transaction #     | Bck. seq. 1 = 1 |             |      |
| Time Stamp Enable | True            |             |      |

In this situation, the transaction has same segment number but a lower transaction number which is not equal to 1. For example, the previous transaction had a transaction number of 6; however, the current transaction has a transaction number of 4. The viewer most likely attempted to replay a taped transaction. The transaction is ignored. Handheld 32 may start presenting transactions when it receives a transaction with a transaction number of one. Until that time, the registers will not be updated.

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## EXAMPLE 13

|                   |               |             |         |
|-------------------|---------------|-------------|---------|
| Mailbox #         | Same          | Score =     | 0       |
| Group #           | Same          | Cume =      | Frozen  |
| Unit #            | Same          | Sav1-Sav7 = | Updated |
| Segment #         | Same          | CB =        | 1       |
| Transaction #     | Bck. seq. = 1 |             |         |
| Time Stamp Enable | True          |             |         |

This is the same situation as the previous example except that when the viewer rewound the tape (assuming the viewer videotaped), the tape was rewound to the beginning of the sequence. Thus, the transaction number is 1. Handheld 32 assumes the viewer is trying to cheat; therefore, handheld 32 resets the Score and Points Registers, freezes the Cume Register and sets the cheater bit to 1. The viewer can continue to play the interactive program and update the resetted Score Register, but the viewer's score does not count toward a prize. Because the Cheater Bit (CB) is set to one, the Cume Register is frozen and the viewer would not receive a message to register the viewer's score with operations 34.

## EXAMPLE 14

|                   |               |             |   |
|-------------------|---------------|-------------|---|
| Mailbox #         | Same          | Score =     | 0 |
| Group #           | Same          | Cume =      | 0 |
| Unit #            | Same          | Sav1-Sav7 = | 0 |
| Segment #         | Same          | CB =        | 0 |
| Transaction #     | Bck. seq. = 1 |             |   |
| Time Stamp Enable | False         |             |   |

This situation is the same as the situation in example 12, however time stamp enable is set to false. Thus, handheld 32 does not care that the viewer may be cheating. A new game is started.

## EXAMPLE 15

|                   |                  |             |      |
|-------------------|------------------|-------------|------|
| Mailbox #         | Same             | Score =     | Same |
| Group #           | Same             | Cume =      | Same |
| Unit #            | Same             | Sav1-Sav7 = | Same |
| Segment #         | Same             | CB =        | Same |
| Transaction #     | Pwd. out of seq. |             |      |
| Time Stamp Enable | True or False    |             |      |

In this situation the viewer is playing the interactive program out of sequence. The viewer may have taped and is jumping ahead, the viewer may have switched channels (surfing) and now has come back, or the viewer may have momentarily left the television viewing area and missed a transaction. Since handheld 32 knows it is playing a transaction out of sequence within the same segment, the handheld merely ignores the transaction and waits for a new transaction with a transaction number of 1. The registers are not updated.

## EXAMPLE 16

|                   |               |             |      |
|-------------------|---------------|-------------|------|
| Mailbox #         | Same          | Score =     | Same |
| Group #           | Same          | Cume =      | Same |
| Unit #            | Same          | Sav1-Sav7 = | Same |
| Segment #         | Same          | CB =        | 1    |
| Transaction #     | Same          |             |      |
| Time Stamp Enable | True or False |             |      |

In this situation the viewer is attempting to replay the exact same transaction again. Handheld 32 simply ignores

the transaction. The cheater bit is set to one because the viewer is attempting to cheat.

It follows from the above description that, even with interleaved games and the viewer's entering and leaving the interactive program at various times, the viewer's reactions and answers to all games in which the viewer participates are stored in some form by handheld 32 and later can be reported to a central processing station (operations 34).

Other objects, aspects and advantages of the invention can be obtained from a view of the claims and the appended figures.

It is to be understood that other embodiments of the present invention can be constructed and be within the spirit and scope of the present invention.

What is claimed is:

1. An interactive presentation system, comprising:
  - a receiver adapted to receive interactive data;
  - a processor, in communication with said receiver, programmed to process said interactive data and present transactions based on said interactive data; and
  - memory, in communication with said processor, adapted to store data, said memory including a plurality of programmer tables.
2. An interactive presentation system according to claim 1, wherein each said programmer table includes a unique identification number, a game score register, and a cumulative score register.
3. An interactive presentation system according to claim 1, wherein said plurality of programmer tables includes an event specific programmer table, a secured programmer table and an unsecured programmer table.
4. An interactive presentation system according to claim 1, further including:
  - a display in communication with said processor; and
  - a keyboard in communication with said processor.
5. An interactive presentation system according to claim 1, further including a secured processor.
6. An interactive presentation system according to claim 1, further including:
  - a dialer for communication between said processor and a remote location.
7. An interactive presentation system according to claim 6, wherein said dialer includes a modem.
8. An interactive presentation system according to claim 6, wherein said dialer communicates with said processor via infrared communication.
9. An interactive presentation system according to claim 1, wherein said receiver receives infrared data and translates said infrared data to a format acceptable to said processor.
10. An interactive presentation system according to claim 1, further including a settop device for receiving a television signal and reading said interactive data from a vertical blanking interval of said television signal.
11. An interactive presentation system according to claim 10, wherein said settop device includes an infrared transmitter for transmitting said interactive data; and said receiver includes an infrared receiver for receiving said interactive data from said infrared transmitter.
12. An interactive presentation system according to claim 1, further including:
  - an insertion system for inserting said interactive data into a television signal.
13. An interactive presentation system according to claim 12, wherein said insertion system inserts said interactive data into a vertical blanking interval of said television signal.

14. An interactive presentation system according to claim 12, wherein said insertion system comprises:

- an inserter, adapted to insert said interactive data into a vertical blanking interval of said television signal;
- a controller adapted to control said inserter; and
- an interface between said controller and said inserter.

15. An interactive presentation system according to claim 12, wherein said insertion system comprises:

- timing means for reading timing information from said television signal;
- a video processor, in communication with said timing means;
- a memory element, in communication with said processor, for storing said interactive data to be inserted into a vertical blanking interval of said television signal; and
- a video multiplexer, in communication with said memory element and said timing means, for selectively outputting either said television signal or said interactive data stored in said memory element.

16. An interactive presentation system according to claim 1, further including:

- an authoring system for creating said interactive data;
- a data insertion system adapted to insert said interactive data into a television signal; and
- a settop device for receiving the interactive data transmitted in said television signal.

17. An interactive presentation system, comprising:

means for receiving at a remote location interactive data in association with a presentation of an event, said interactive data including commands and event specific data;

storage means, having a plurality of programmer tables, for storing data, said plurality of programmer tables including a secured programmer table, an unsecured programmer table and an event specific programmer table;

means, responsive to said commands and said storage means, for presenting a viewer with a transaction; and

means for updating said storage means based on said commands and said event specific data.

18. An interactive presentation system according to claim 17, wherein each said programmer table has a unique identification member that can be assigned to an entity so that only the interactive data designated by said entity can be used to update the respective said programmer table.

19. An interactive presentation system according to claim 17, wherein each said programmer table includes a plurality of registers.

20. An interactive presentation system according to claim 17, further including a first processor and a second processor, said second processor being a secured processor.

21. An interactive presentation system, comprising:

a receiver for receiving at a remote location interactive data in association with a presentation of an event, said interactive data including commands and event specific data;

a processor, in communication with said receiver, adapted to present a viewer with an interactive program, said interactive program based on said event specific data and said commands;

a memory element, in communication with said processor, said memory element including a plurality of programmer tables, each said programmer table having

a unique identification number, said plurality of programmer tables including a secured programmer table, an unsecured programmer table and an event specific programmer table; and

a keypad, in communication with said processor so that information may be input by the viewer.

22. An interactive presentation system according to claim 21, further including a display.

23. An interactive presentation system according to claim 21, wherein each said programmer table identification number can be assigned to an entity so that only the interactive data designated by said entity can be used to update said programmer table.

24. A method for presenting interactive programs via an interactive system such that a plurality of said interactive programs can be interleaved, said interactive system including a remote terminal for presenting said interactive programs, said remote terminal being selectively tuneable to receive and present at least one of said plurality of interactive programs, said remote terminal having a memory unit, the method comprising the steps of:

dividing a portion of said memory unit in said remote terminal into a plurality of programmer tables;

assigning a first identification code to a first one of said programmer tables;

assigning a second identification code to a second one of said programmer tables, said second identification code being different from said first identification code;

constructing first interactive data, said first interactive data including first commands and first event specific data, said first interactive data containing a reference to said first identification code;

constructing second interactive data, said second interactive data including second commands and second event specific data, said second interactive data containing a reference to said second identification code;

sending said first interactive data and said second interactive data to a remote location during a same time period;

receiving said first interactive data and said second interactive data at said remote location;

allowing a viewer at said remote location to selectively tune said remote terminal to operate upon selected interactive data, said selected interactive data being either said first interactive data or said second interactive data;

presenting said viewer with a transaction, on said remote terminal based on said selected interactive data; and

updating one of said first and second programmer tables referenced by said selected interactive data.

25. A method according to claim 24, further including the steps of:

tuning said remote terminal to operate upon new interactive data, said new interactive data being one of said first and second interactive data not initially selected;

presenting said viewer with a transaction, on said remote terminal based on said new interactive data; and

updating one of said first and second programmer tables referenced by said new interactive data.

26. A method according to claim 24, further including the steps of:

assigning said first identification code to a first entity; and assigning said second identification code to a second entity;

wherein said first interactive data is constructed by said first entity and said second interactive data is constructed by said second entity.

27. An interactive presentation system, comprising:

a receiver adapted to receive interactive data, said receiver received interactive data comprising first interactive data having a first set of commands and first event specific data when a viewer chooses to participate in a first event, and said receiver received interactive data comprising second interactive data having a second set of commands and second event specific data when said viewer chooses to participate in a second event;

a first processor programmed to present transactions to said viewer based on said received interactive data so that when said received interactive data includes said first commands and first event specific data transactions are presented in association with said first event, and when said interactive data includes said second commands and second event specific data transactions are presented in association with said second event;

a memory unit, in communication with said first processor, said memory unit including a plurality of programmer tables adapted to store data in an appropriate one of said programmer tables so that when said received interactive data includes said first set of commands and first event specific data said appropriate programmer table is a first one of said programmer tables, and when said received interactive data includes said second set of commands and said second event specific data said appropriate programmer table is a second one of said programmer tables, so that (1) said viewer can change between said first event and said second event throughout said first event and said second event, thereby interleaving said first event with said second event and interleaving said transactions presented in association with said first event with said transactions presented in association with said second event, and (2) when said viewer chooses to participate in said first event said second programmer table is not affected and when said viewer chooses to participate in said second event said first programmer table is not affected.

28. A system according to claim 27, wherein said first programmer table includes:

a first register adapted to store game points;

a second register adapted to store cumulative series points; and

a third register adapted to store sequencing information.

29. A system according to claim 27, further including a second processor for maintaining secure data.

30. A system according to claim 27, further including a keyboard and a display.

31. A system according to claim 27, further including means for interpreting said first set of commands.

32. An interactive presentation system, comprising:

a receiver adapted to receive during a first time interval first interactive data including first commands and first event specific data associated with a first event and during a second time interval second interactive data including second commands and second event specific data associated with a second event;

a processor programmed to present first transactions to a viewer during said first time interval based on said first interactive data and to present second transactions to the viewer during said second time interval based on said second interactive data;



a memory unit, in communication with said processor, including a first programmer table storing first transaction data associated with said first event and a second programmer table storing second transaction data associated with said second event, so that presenting said first transactions does not effect said second programmer table and presenting said second transactions does not effect said first programmer table.

33. A system according to claim 32, further including a keyboard and a display, in communication with said processor.

34. A system according to claim 32, wherein said first and second time intervals do not overlap.

35. A system according to claim 32, wherein said first and second time intervals overlap.

36. A method for receiving and presenting interactive programs on an interactive system, said interactive system including a memory unit, said memory unit including a first programmer table having a first identification code and a second programmer table having a second identification code different from said first identification code, said method comprising the steps of:

- (a) receiving first interactive data, said first interactive data including first commands and first event specific data, said first interactive data including a reference to said first identification code;
- (b) presenting a viewer with a first transaction based on said first interactive data without erasing said second programmer table;
- (c) updating said first programmer table based on step (b) without erasing said second programmer table;
- (d) receiving second interactive data, said second interactive data including second commands and second event specific data, said second interactive data including a reference to said second identification code;
- (e) presenting said viewer with a second transaction based on said second interactive data without erasing said first programmer table; and
- (f) updating said second programmer table based on step (e) without erasing said first programmer table.

37. A method according to claim 36, further including the steps of:

- (g) receiving third interactive data, said third interactive data including third commands and third event specific data, said third interactive data including a reference to said first identification code;
- (h) presenting said viewer with a third transaction based on said third interactive data without erasing said second programmer table; and
- (i) updating said first programmer table based on step (h) without erasing said second programmer table.

38. A system for creating an interactive program adapted for presentation on a remote terminal, said remote terminal including a memory unit, said memory unit including a plurality of programmer tables, said system comprising:

- means for choosing a programmer table from said plurality of programmer tables;
- means for creating a script including:
  - means for selecting a message,
  - means for selecting a question,
  - means for selecting an appropriate response, and
  - means for selecting response criteria; and
- means for compiling said script to create interactive data and associating said script with said chosen programmer table so that presenting an interactive program

based on said interactive data will utilize said chosen programmer table.

39. A system according to claim 38, further including means (1) for creating a live event script and (2) for creating a script having timing information.

40. A system according to claim 38, further including means for assigning a subset of said plurality of programmer tables to an entity, wherein said means for choosing restricts a choice of said programmer tables for said entity to said subset of said plurality of programmer tables.

41. A system according to claim 38, further including: means for validating and invalidating said interactive data; and

means for transmitting said interactive data to a remote location only if said interactive data is valid.

42. A method for making an interactive video program for presentation on a remote interactive system, said remote interactive system including a memory unit, said memory unit including a first programmer table having a first identification code and a second programmer table having a second identification code different from said first identification code, said method comprising the steps of:

- creating a first script;
- compiling said first script to create first interactive data, said first interactive data including first commands and first event specific data, said first interactive data containing a reference to said first identification code;
- transmitting said first interactive data to said remote interactive system for presentation of a first transaction to a viewer based on said first interactive data without erasing said second programmer table;
- creating a second script;
- compiling said second script to create second interactive data, said second interactive data including second commands and second event specific data, said second interactive data containing a reference to said second identification code; and
- transmitting said second interactive data to said remote interactive system for presentation of a second transaction to the viewer based on said second interactive data without erasing said first programmer table.

43. A method for making an interactive video program according to claim 42, further including the steps of:

- creating a third script;
- compiling said third script to create third interactive data, said third interactive data including third commands and third event specific data, said third interactive data containing a reference to said first identification code; and
- transmitting said third interactive data to said remote interactive system for presentation of a third transaction to the viewer based on said third interactive data without erasing said second programmer table.

44. A method for making an interactive video program according to claim 42, wherein said step of creating said first script includes the steps of:

- selecting a question,
- selecting an appropriate response, and
- selecting response criteria.

45. A system for presenting interactive video programs, comprising:

- a receiver adapted to receive interactive data;
- a processor, in communication with said receiver, adapted to process said interactive data and present transactions based on said interactive data;

a plurality of programmer tables, in communication with said processor, adapted to store data related to the transactions; and

an insertion system, comprising:

timed insertion means for inserting said interactive data into a video signal according to timing information; live insertion means for real time insertion of said interactive data into said video signal; and operator insertion means for inserting said interactive data into said video signal at a command of an operator.

46. A system according to claim 45, wherein said timed insertion means inserts said interactive data into a specific video frame indicated by said timing information.

47. A system according to claim 45, wherein said timed insertion means, said live insertion means and said operator insertion means insert said interactive data into a vertical blanking interval of said video signal.

48. A system according to claim 45, wherein said timed insertion means inserts said interactive data at a specific time interval in relation to a frame number.

49. An interactive presentation system according to claim 1, wherein said plurality of programmer tables includes a plurality of at least one of (1) event specific programmer tables, (2) secured programmer tables and (3) unsecured programmer tables.

50. An interactive presentation system according to claim 1, wherein said interactive data is not visible to a viewer.

51. An interactive presentation system according to claim 1, wherein said interactive data is in a television signal so that said interactive data does not alter any video portion or any audio portion of said television signal.

52. An interactive presentation system according to claim 1, wherein

said interactive data is in a television signal, said television signal includes a prerecorded television program; said interactive data includes questions and answers created after said recording of said television program; and said interactive data does not effect said television program's video or audio presentations.

53. An interactive presentation system according to claim 1, wherein said interactive data is stripped from a television signal so that a viewer is unable to view any changes in said television signal due to a presence and lack of presence of said interactive data.

54. An interactive presentation system according to claim 1, wherein:

said interactive data includes first sequencing information;

at least one of said programmer tables includes a location adapted to store second sequencing information; and said processor is adapted to compare said first sequencing information with said second sequencing information and inhibit the presentation of a given one of said transactions if the comparison between said first sequencing information and said second sequencing information indicates that said given transaction is not in sequence.

55. An interactive presentation system according to claim 54, wherein said first sequencing information and said second sequencing information each includes a transaction number and a segment number.

56. An interactive presentation system according to claim 1, wherein:

said interactive data includes first sequencing information;

at least one of said programmer tables includes a location adapted to store second sequencing information; and said processor is adapted to compare said first sequencing information with said second sequencing information and inhibit scoring of a given one of said transactions if the comparison between said first sequencing information and said second sequencing information indicates that said given transaction is not in sequence.

57. An interactive presentation system according to claim 1, wherein:

said interactive data includes first sequencing information;

at least one of said programmer tables includes a location adapted to store second sequencing information and a cumulative score; and

said processor is adapted to compare said first sequencing information with said second sequencing information and inhibit, for a given one of said transactions, updating of said cumulative score in the programmer table associated with said given transaction if the comparison between said first sequencing information and said second sequencing information indicates that said given transaction is not in sequence.

58. An interactive presentation system according to claim 1, wherein:

said interactive data includes first identification information;

at least one of said programmer tables includes a location adapted to store second identification information; and

said processor is adapted to prevent use of a given one of said programmer tables if said second identification information in said given programmer table does not match said first identification information in said interactive data.

59. An interactive presentation system according to claim 1, wherein:

said interactive data includes first game information;

at least a subset of said programmer tables includes a location adapted to store second game information and further adapted to store a game score; and

said processor is adapted to, after presenting a given one of said transactions associated with one of said subset of programmer tables, update said game score of said associated programmer table if said second game information in said associated programmer table matches said first game information in said interactive data.

60. An interactive presentation system according to claim 1, wherein:

said interactive data includes first series information;

at least one of said programmer tables includes a location adapted to store second series information, and further adapted to store a series score; and

said processor is adapted to, after presenting a given one of said transactions associated with one of said programmer tables, update said series score of said associated programmer table if said second series information in said associated programmer table matches said first series information in said interactive data.

61. An interactive presentation system according to claim 1, wherein:

a viewer interacts with said transactions, creating a score, and

said presentation system further includes a dialer adapted to transmit said score to an operations office.

62. An interactive presentation system according to claim 3, wherein said event specific programmer table is adapted to store said data for one particular event.

63. An interactive presentation system according to claim 3, wherein said event specific programmer table is adapted to store said data for a pay-per-play event.

64. An interactive presentation system according to claim 3, wherein said secured programmer table is adapted to store said data in a secure and tamper resistant manner.

65. An interactive presentation system according to claim 3, wherein said unsecured programmer table is adapted to store said data in a RAM.

66. An interactive presentation system according to claim 5, wherein said secured processor is tamper resistant.

67. An interactive presentation system according to claim 17, wherein said event specific programmer table is adapted to store said data for one particular event.

68. An interactive presentation system according to claim 17, wherein said event specific programmer table is adapted to store said data for a pay-per-play event.

69. An interactive presentation system according to claim 17, wherein said secured programmer table is adapted to store said data in a secure and tamper resistant manner.

70. An interactive presentation system according to claim 17, wherein said unsecured programmer table is adapted to store said data in a RAM.

71. An interactive presentation system according to claim 20, wherein said secured processor is adapted to be tamper resistant.

72. An interactive presentation system according to claim 21, wherein said event specific programmer table is adapted to store data for one particular event.

73. An interactive presentation system according to claim 21, wherein said event specific programmer table is adapted to store data for a pay-per-play event.

74. An interactive presentation system according to claim 21, wherein said secured programmer table is adapted to store data in a secure and tamper resistant manner.

75. An interactive presentation system according to claim 21, wherein said unsecured programmer table is adapted to store data in a RAM.

76. An interactive presentation system according to claim 21, wherein said unsecured programmer table includes a location for storing a programmer table number, an affiliate number, a segment number, a transaction number, a group number and a unit number.

77. An interactive presentation system according to claim 21, wherein:

said interactive data includes first sequencing information;

at least one of said programmer tables includes a location adapted to store second sequencing information; and said processor is programmed to compare said first sequencing information with said second sequencing information and inhibit presentation of a given transaction if the comparison between said first sequencing information and said second sequencing information indicates that said given transaction is not in sequence.

78. An interactive presentation system according to claim 21, wherein:

said interactive data includes first sequencing information;

at least one of said programmer tables includes a location adapted to store second sequencing information; and said processor is programmed to compare said first sequencing information with said second sequencing

information and inhibit scoring of a given transaction if the comparison between said first sequencing information and said second sequencing information indicates that said given transaction is not in sequence.

79. An interactive presentation system according to claim 21, wherein:

said interactive data includes first identification information;

at least one of said programmer tables includes a location adapted to store second identification information; and said processor is programmed to prevent use of a given one of said programmer tables if said second identification information in said given programmer table does not match said first identification information in said interactive data.

80. A system according to claim 21, wherein each said programmer table identification number can be assigned to a given interactive program so that only the interactive data designated for said given interactive program can be used to update the respective programmer table.

81. A method according to claim 24, wherein said step of sending sends said first interactive data on a first vertical blanking interval of a first channel and sends said second interactive data on a second vertical blanking interval of a second channel.

82. A method according to claim 24, further including the steps of:

(a) allowing the viewer to selectively tune said remote terminal to operate upon new interactive data, said new interactive data being one of said first and second interactive data that was not tuned in the previous tuning step;

(b) presenting said viewer with a transaction, on said remote terminal, based on said new interactive data; and

(c) updating said programmer table referenced by said new interactive data.

83. A method according to claim 82, further comprised of repeating steps (a) through (c).

84. A system according to claim 27, wherein:

said first interactive data includes first identification information; and

said first programmer table includes a location adapted to store said first identification information.

85. A system according to claim 27, wherein said receiver receives said first interactive data on a first channel and receives said second interactive data on a second channel.

86. A system according to claim 27, wherein:

said received interactive data comprises third interactive data having a third set of commands and third event specific data when said viewer chooses to participate in a third event;

said first event is part of a first series;

said third event is part of said first series, said third event occurs after said first and second events; and

said second programmer table is not affected and said first programmer table is updated during said third event if said viewer chooses to participate in said third event.

87. A system according to claim 86, wherein:

said first series is a baseball World Series;

said first event is game one of said World Series;

said third event is game two of said World Series; and

said second event is a game show.

88. A system according to claim 32, wherein said first and second time intervals are identical.

89. A system according to claim 32, wherein said first interactive data and said second interactive data are received on a same channel.

90. A system according to claim 32, wherein said first interactive data and said second interactive data are received on different channels.

91. A system according to claim 39, wherein said live event script includes questions and answers capable of being stored until an appropriate cue in a live event.

92. A system according to claim 39, wherein said live event script includes questions and answers capable of being immediately transmitted to said remote terminal.

93. A system according to claim 39, wherein said script having the timing information includes questions and answers adapted to be transmitted to said remote terminal at a predetermined time.

94. A system according to claim 39, wherein said script having the timing information includes questions and answers adapted to be transmitted to said remote terminal at a predetermined frame.

95. A system for presenting interactive video programs according to claim 45, wherein said interactive data is inserted into said video signal so as to be transparent to a viewer.

96. A system for presenting interactive video programs according to claim 45, wherein said timed insertion means inserts said interactive data into a prerecorded television program without affecting said television program's audio and video presentation.

97. A system for presenting interactive video programs according to claim 45, wherein said timed insertion means, said operator insertion means and said live insertion means all insert said interactive data into a prerecorded television program without affecting said television program's audio and video presentation.

98. A system for presenting interactive video programs according to claim 45, further including:

an authoring system for creating said interactive data having said timing information.

99. A system for presenting interactive video programs according to claim 45, wherein said timed insertion means inserts said interactive data at a specific time.

100. A system for presenting interactive video programs according to claim 45, wherein said timed insertion means inserts said interactive data at a specific frame.

101. A system for presenting interactive video programs according to claim 45, further including:

means for assigning a priority value to said interactive data; and

means for scheduling downloading of said interactive data when there is no data ready for transmission with a higher priority.

102. A system for presenting interactive video programs according to claim 45, wherein said live insertion means inserts said interactive data into said video signal immediately after receiving said interactive data.

103. A system for presenting interactive video programs according to claim 45, wherein said operator insertion means stores pre-defined transactions.

104. A method for presenting interactive programs on an interactive system such that a plurality of said interactive programs can be interleaved, said interactive system including a remote terminal for presenting said interactive programs, said remote terminal having a memory unit, said memory unit having a plurality of programmer tables, said plurality of interactive programs including a first interactive program and a second interactive program, said first inter-

active program including first interactive data, said second interactive program including second interactive data, said method comprising the steps of:

creating said first interactive data, said first interactive data including first commands, first event specific data and a reference to a first one of said programmer tables;

creating said second interactive data, said second interactive data including second commands, second event specific data and a reference to a second one of said programmer tables;

sending said first interactive data to a remote location; and

sending said second interactive data to said remote location during a same time period as said first interactive data is sent to said remote location so that said remote terminal may be selectively tuned to either of or both said first interactive program and said second interactive program.

105. A method for presenting interactive programs according to claim 104, wherein said first interactive program is capable of being interleaved with said second interactive program.

106. A method for presenting interactive programs according to claim 104, further including the step of:

inserting said first interactive data into a preexisting television program so that said first interactive data will not be detected by a viewer without said remote terminal.

107. A method for presenting interactive programs according to claim 104, further including the step of:

inserting said first interactive data into a live television program so that said first interactive data will not be detected by a viewer without said remote terminal.

108. A method for presenting interactive programs, comprising the steps of:

receiving a first interactive program at a remote location during a first time period;

receiving a second interactive program at said remote location during said first time period;

tuning into said first interactive program during said first time period;

presenting a first transaction based on said first interactive program during said first time period;

tuning into said second interactive program, before said first interactive program is completed and after said second interactive program has started, during said first time period; and

presenting a second transaction based on said second interactive program;

wherein said first interactive program includes first commands and first event specific data designed to manipulate a first programmer table and said second interactive program includes second commands and second event specific data designed to manipulate a second programmer table.

109. A method for presenting interactive programs, comprising the steps of:

receiving a first interactive program at a remote location during a first time period;

receiving a second interactive program at said remote location during said first time period;

tuning into said first interactive program during said first time period;

presenting a first transaction based on said first interactive program during said first time period;

tuning into said second interactive program, before said first interactive program is completed and after said second interactive program has started, during said first time period;

presenting a second transaction based on said second interactive program;

storing results of said first transaction in a first programmer table; and

storing results of said second transaction in a second programmer table.

110. An interactive presentation system, comprising:

a receiver adapted to receive first interactive data including first commands and first event specific data associated with a first event and second interactive data including second commands and second event specific data associated with a second event, said first interactive data being transmitted on a first channel and said second interactive data being transmitted on a second channel;

a processor programmed to present a first set of transactions to a viewer based on said first interactive data and to present a second set of transactions to the viewer based on said second interactive data, said processor capable of interleaving said first set of transactions and said second set of transactions;

a memory unit, in communication with said processor, including a first programmer table adapted to store first transaction data associated with said first event and a second programmer table adapted to store second transaction data associated with said second event, so that presenting said first set of transactions does not effect said second programmer table and presenting said second set of transactions does not effect said first programmer table.

111. An interactive presentation system according to claim 110, wherein said first interactive data is transmitted during a same time interval as said second interactive data.

112. An interactive presentation system, comprising:

a receiver adapted to receive first interactive data including first commands and first event specific data associated with a first event and second interactive data including second commands and second event specific data associated with a second event, said second event occurring after said first event, said first interactive data being transmitted on a same channel as said second interactive data;

a processor programmed to present a first set of transactions to a viewer based on said first interactive data and to present a second set of transactions to the viewer based on said second interactive data;

a memory unit, in communication with said processor, including a first programmer table adapted to store first transaction data associated with said first event and a second programmer table adapted to store second transaction data associated with said second event, so that presenting said first set of transactions does not effect said second programmer table and presenting said second set of transactions does not effect said first programmer table.

113. An interactive presentation system, comprising:

a receiver adapted to receive a plurality of interactive programs, each said interactive program having modules;

a processor capable of presenting said modules of said plurality of interactive programs; and

a memory unit, in communication with said processor, including a plurality of programmer tables, each said interactive program being associated with one of said programmer tables so (1) that presenting said modules of one of said plurality of interactive programs effects said associated programmer table and does not affect said programmer tables not associated with said one interactive program, (2) said plurality of interactive programs can be broadcast at different times on a same channel, (3) said plurality of interactive programs can be broadcast at a same time on different channels, and (4) one of said interactive programs can be simultaneously broadcast on different channels.

114. An interactive presentation system according to claim 113, wherein at least two of said plurality of interactive programs are associated with a same one of said programmer tables.

115. A method for making an interactive video program for presentation on an interactive system, said interactive system including a memory unit, said memory unit including a plurality of programmer tables, said method comprising the steps of:

selecting a first programmer table from said plurality of programmer tables;

creating a first script including:

creating a question,

creating an answer associated with said question, and

creating a scoring plan; and

compiling said first script to create first interactive data and associating said first interactive data with said first programmer table so that presenting an interactive program based on said first interactive data will utilize said first programmer table.

116. A method for making an interactive video program according to claim 115, further including the steps of:

selecting a second programmer table from said plurality of programmer tables;

creating a second script; and

compiling said second script to create second interactive data and associating said second interactive data with said second programmer table so that presenting an interactive program based on said second interactive data will utilize said second programmer table.

117. An interactive presentation system, comprising:

a receiver adapted to receive interactive data;

a processor, in communication with said receiver, programmed to process said interactive data and present transactions based on said interactive data; and

memory, in communication with said processor, adapted to store data, said memory including a plurality of programmer tables, wherein at least a subset of said plurality of programmer tables are adapted to store sequencing information and said processor is capable of reading said sequencing information.

118. An interactive presentation system according to claim 117, wherein said sequencing information includes:

a programmer table number;

game information;

series information;

a transaction number; and

a segment number.

119. An interactive presentation system according to claim 118, wherein said sequencing information further includes a cheater bit, said cheater bit being adapted to signal that a viewer has cheated.

120. An interactive presentation system according to claim 117, wherein:

said interactive data includes sequencing data; and  
said processor is programmed to compare said sequencing data with said sequencing information and inhibit scoring of a given one of said transactions if the comparison between said sequencing data and said sequencing information indicates that said given transaction is not in sequence.

121. An interactive presentation system according to claim 117, wherein:

said interactive data includes sequencing data;  
each of said subset of programmer tables includes a location adapted to store a score; and  
said processor is programmed to compare said sequencing data with said sequencing information and inhibit, for a given one of said transactions, updating of said score in the programmer table associated with said given transaction if the comparison between said sequencing data and said sequencing information indicates that said given transaction is not in sequence.

122. An interactive presentation system according to claim 117, wherein:

said interactive data includes sequencing data; and  
said processor is programmed to compare said sequencing data with said sequencing information and inhibit the presentation of a given one of said transactions if the comparison between said sequencing data and said sequencing information indicates that said given transaction is not in sequence.

123. A method for presenting an interactive program via a viewer unit, said viewer unit including a memory adapted to store sequencing information, said method comprising the steps of:

receiving interactive data, said interactive data including sequencing data;  
comparing said sequencing data to said sequencing information stored in said memory of said viewer unit to determine if said interactive data is in sequence;  
presenting a transaction based on said interactive data if said interactive data is in sequence; and  
scoring said transaction if said interactive data is in sequence.

124. A method for presenting an interactive program according to claim 123, further including the step of:

inhibiting said scoring of said transaction if said interactive data is not in sequence.

125. A method for presenting an interactive program according to claim 123, further including said step of:

updating a cumulative score if said interactive data is in sequence; and

inhibiting said updating of said cumulative score if said interactive data is in sequence.

126. A method for presenting an interactive program according to claim 123, wherein said sequencing information includes:

a programmer table number;  
game information;  
series information;  
a transaction number; and  
a segment number.

127. A method for presenting an interactive program according to claim 123, wherein:

said sequencing data includes game data and series data;

said sequencing information includes game information and series information;

said memory of said viewer unit stores a cumulative score;

said step of comparing includes comparing said game data to said game information and comparing said series data to said series information; and

the method further includes the step of:

updating said cumulative score if said game data matches said game information and said series data matches said series information.

128. A method for presenting an interactive program according to claim 123, wherein:

said sequencing data includes game data;

said sequencing information includes game information;

said memory of said viewer unit stores a score;

said step of comparing includes comparing said game data to said game information; and

the method further includes the step of:

updating said score if said game data matches said game information.

129. A method for presenting an interactive program according to claim 123, wherein:

said sequencing data includes series data;

said sequencing information includes series information;

said memory of said viewer unit stores a cumulative score;

said step of comparing includes comparing said series data to said series information; and

the method further includes the step of:

updating said cumulative score if said series data matches said series information.

130. A method for presenting an interactive program according to claim 123, wherein:

said sequencing data includes transaction number data and segment number data;

said sequencing information includes transaction number information and segment number information; and

said interactive data is in sequence when said segment number data matches said segment number information and said transaction number data is incremental of said transaction number information.

131. A method for presenting an interactive program according to claim 123, wherein:

said sequencing data includes transaction number data and segment number data;

said sequencing information includes transaction number information and segment number information; and

said interactive data is in sequence when said segment number data is incremental of said segment number information and said transaction number data is incremental of said transaction number information.

132. A method for presenting an interactive program according to claim 123, wherein:

said sequencing data includes transaction number data;

said sequencing information includes transaction number information; and

said interactive data is not in sequence when said transaction number data is not incremental of said transaction number information.

133. An interactive presentation system, comprising:  
 a receiver adapted to receive interactive data associated with one or more events, each said event including one or more transactions;  
 a processor, in communication with said receiver, programmed to process said interactive data and present the transactions based on said interactive data so that a viewer can obtain an event score based on interacting with said presented transactions associated with one of said events; and  
 memory, in communication with said processor, adapted to store data including event information, series information, event scores and a cumulative score so that a plurality of the events can have identical said series information and a sum of said event scores can be accumulated in said cumulative score, each of said events having said identical series information being displaced in time.

134. A method for presenting an interactive program, comprising the steps of:  
 receiving first interactive data associated with a first event and a first cumulative score;  
 presenting a first transaction based on said first interactive data;  
 updating said first cumulative score based on said first transaction;  
 receiving second interactive data associated with a second event and a second cumulative score;  
 presenting a second transaction based on said second interactive data;  
 updating said second cumulative score based on said second transaction;  
 receiving third interactive data associated with a third event and said first cumulative score;  
 presenting a third transaction based on said third interactive data; and  
 updating said first cumulative score based on said third transaction.

135. A method for presenting an interactive program according to claim 134, further including the steps of:  
 comparing first series data in said first interactive data with a first series value in a first programmer table;  
 comparing second series data in said second interactive data with a second series value in a second programmer table; and

comparing third series data in said third interactive data with said first series value in said first programmer table.

136. A method for presenting an interactive program according to claim 134, further including the steps of:  
 receiving fourth interactive data associated with a fourth event and said second cumulative score;  
 presenting a fourth transaction based on said fourth interactive data; and  
 updating said second cumulative score based on said fourth transaction.

137. A method for presenting an interactive program according to claim 134, further including the steps of:  
 receiving fourth interactive data associated with said first event and said first cumulative score;  
 presenting a fourth transaction based on said fourth interactive data; and  
 updating said first cumulative score based on said fourth transaction.

138. A method for presenting an interactive program according to claim 134, wherein said second programmer table is not updated in response to said first transaction or said third transaction.

139. A method for presenting an interactive program according to claim 134, wherein:

said first event is a first episode of a first game show;  
 said second event is a first episode of a second game show; and  
 said third event is a second episode of said first game show.

140. A method for presenting an interactive program according to claim 134, wherein:

said first event is a first part of a first game show;  
 said second event is an advertisement; and  
 said third event is a second part of said first game show.

141. A method for presenting an interactive program according to claim 134, wherein:

said first event is a first advertisement;  
 said second event is a game show; and  
 said third event is a second advertisement.

\* \* \* \* \*



EVIDENCE APPENDIX E  
COPY OF LADUE U.S. PATENT NO. 5,999,808





US005999808A

**United States Patent** [19]**LaDue**[11] **Patent Number:** **5,999,808**[45] **Date of Patent:** **\*Dec. 7, 1999**[54] **WIRELESS GAMING METHOD**[75] **Inventor:** **Christoph Karl LaDue**, Santa Cruz, Calif.[73] **Assignee:** **Aeris Communications, Inc.**, San Jose, Calif.[\*] **Notice:** This patent is subject to a terminal disclaimer.[21] **Appl. No.:** **08/597,807**[22] **Filed:** **Jan. 7, 1996****Related U.S. Application Data**[63] **Continuation-in-part of application No. 08/571,347**, Dec. 12, 1995, abandoned.[51] **Int. Cl.<sup>6</sup>** ..... **H04Q 7/24; H04Q 7/00; G06K 5/00; G06F 3/15**[52] **U.S. Cl.** ..... **455/412; 455/31.2; 235/380; 364/412.1; 463/20; 463/25**[58] **Field of Search** ..... **235/380; 364/412.1; 455/127. 31.2; 273/299; 463/20. 25; 375/200; 370/94.1**[56] **References Cited****U.S. PATENT DOCUMENTS**

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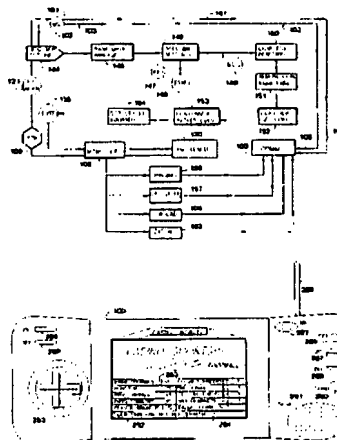
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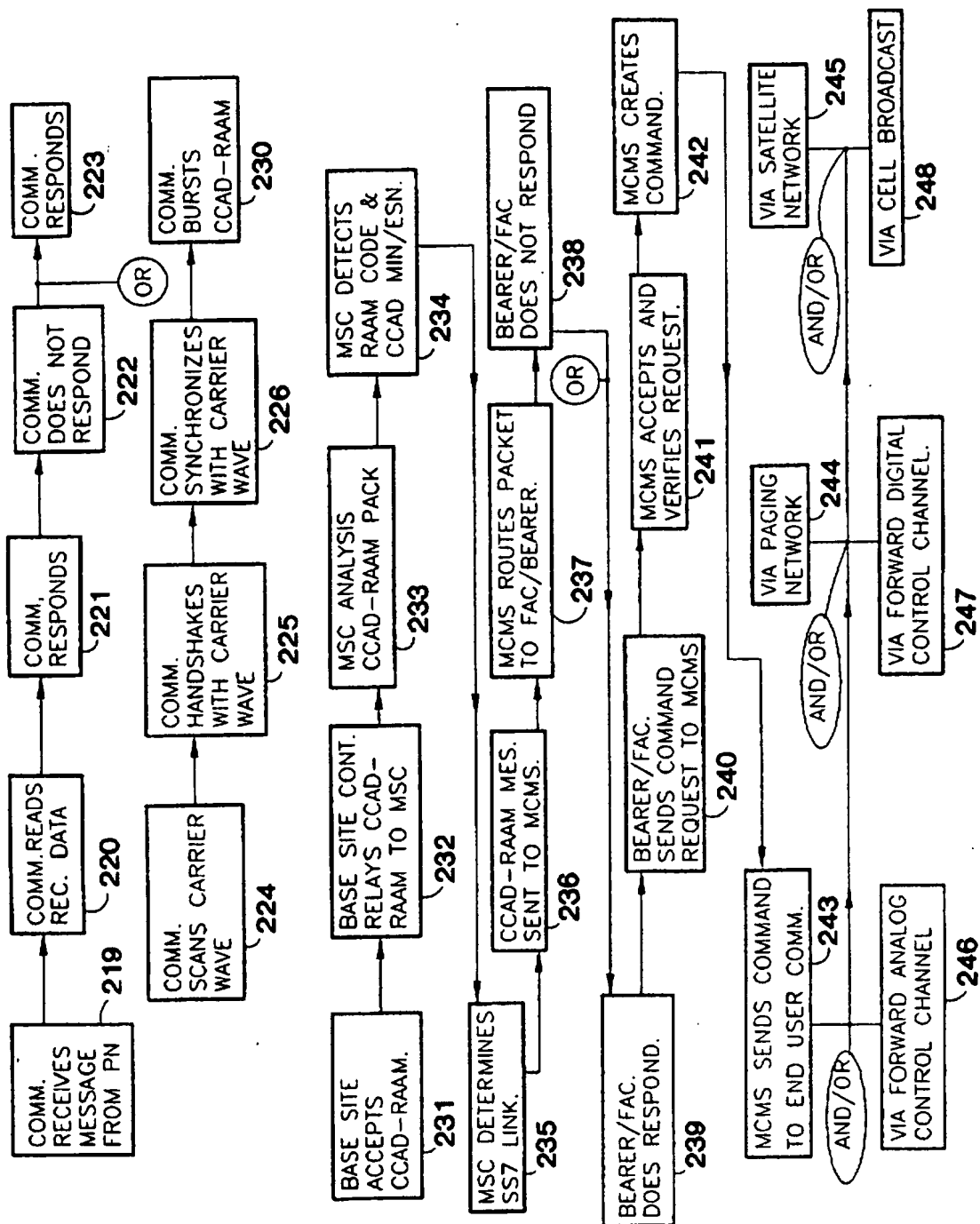
**ABSTRACT**

A method for seamlessly transmitting application specific messages over cellular radio system control channels and switches, for use in wireless gaming and wagering, including the steps of: transmitting application specific messaging bits, configured to appear as origination data packets having from eight to thirty-two digit fields, utilizing control channels, remote feature control request features, and IS-41 protocols. The messaging bits are transmitted over cellular control channels, for example, an AMPS, D-AMPS and TACS FSK modulated reverse control channel (RECC) 10 Kbps 48 word BCH hamming coded control channel. The messaging bits are then applied to communicate with, identify, monitor, and locate the application specific system, such as a wagering game, board game or other application specific system, thereby allowing for an integrated application specific two-way communications system. The application specific system may comprise card games, board games, video games, wagering games, and the like.

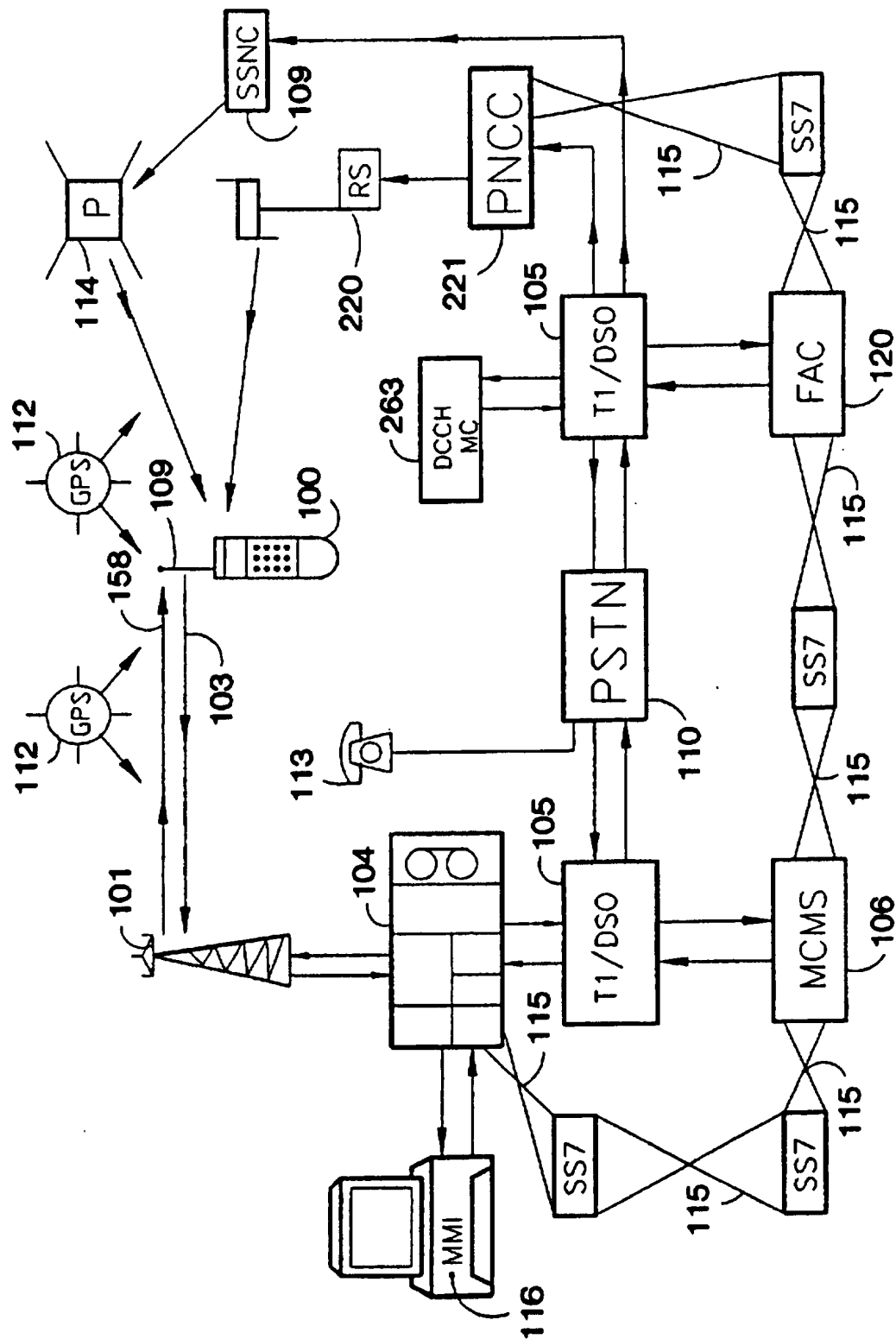
**19 Claims, 13 Drawing Sheets**

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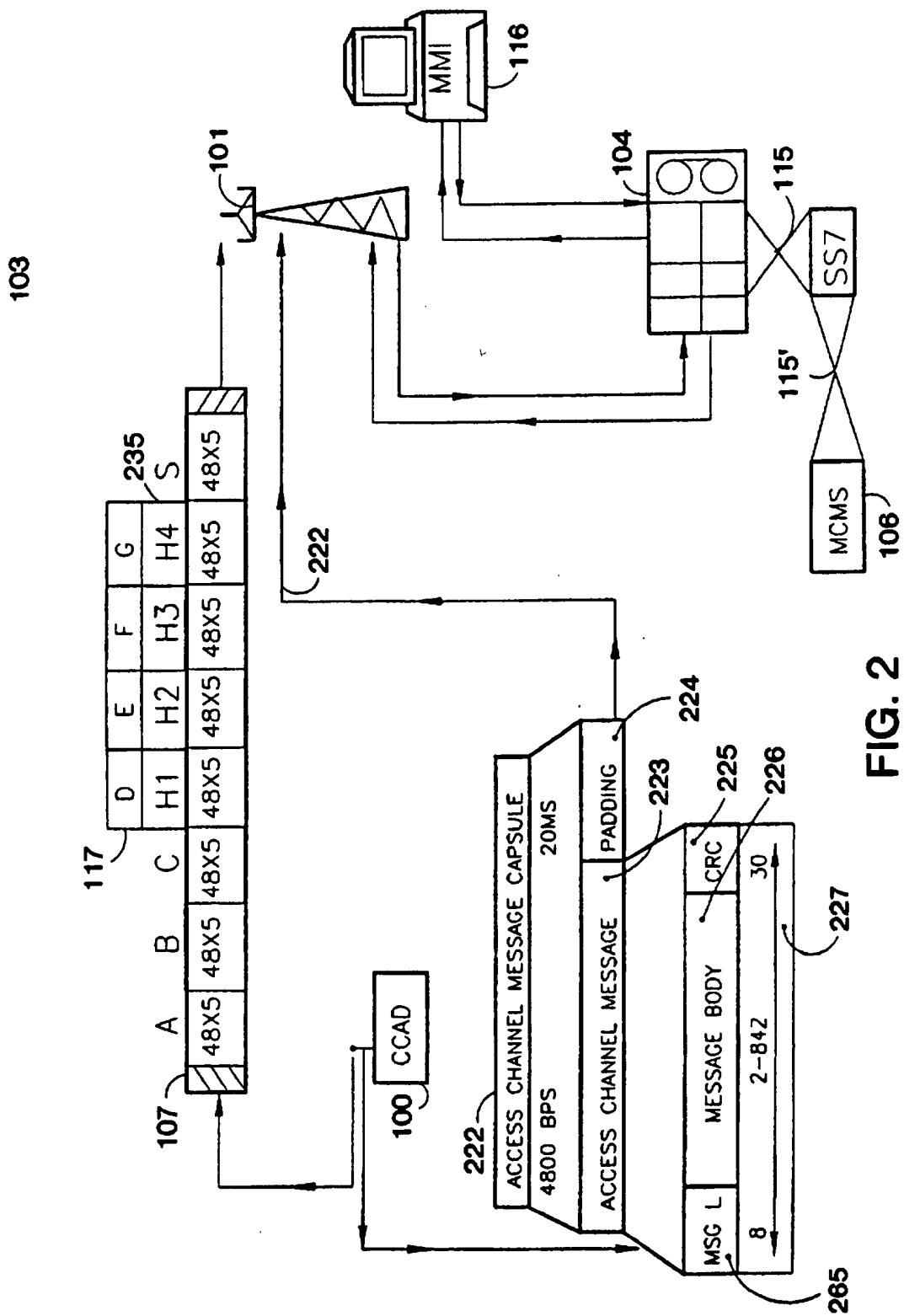
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**FIG. 1A**



**FIG. 1B**



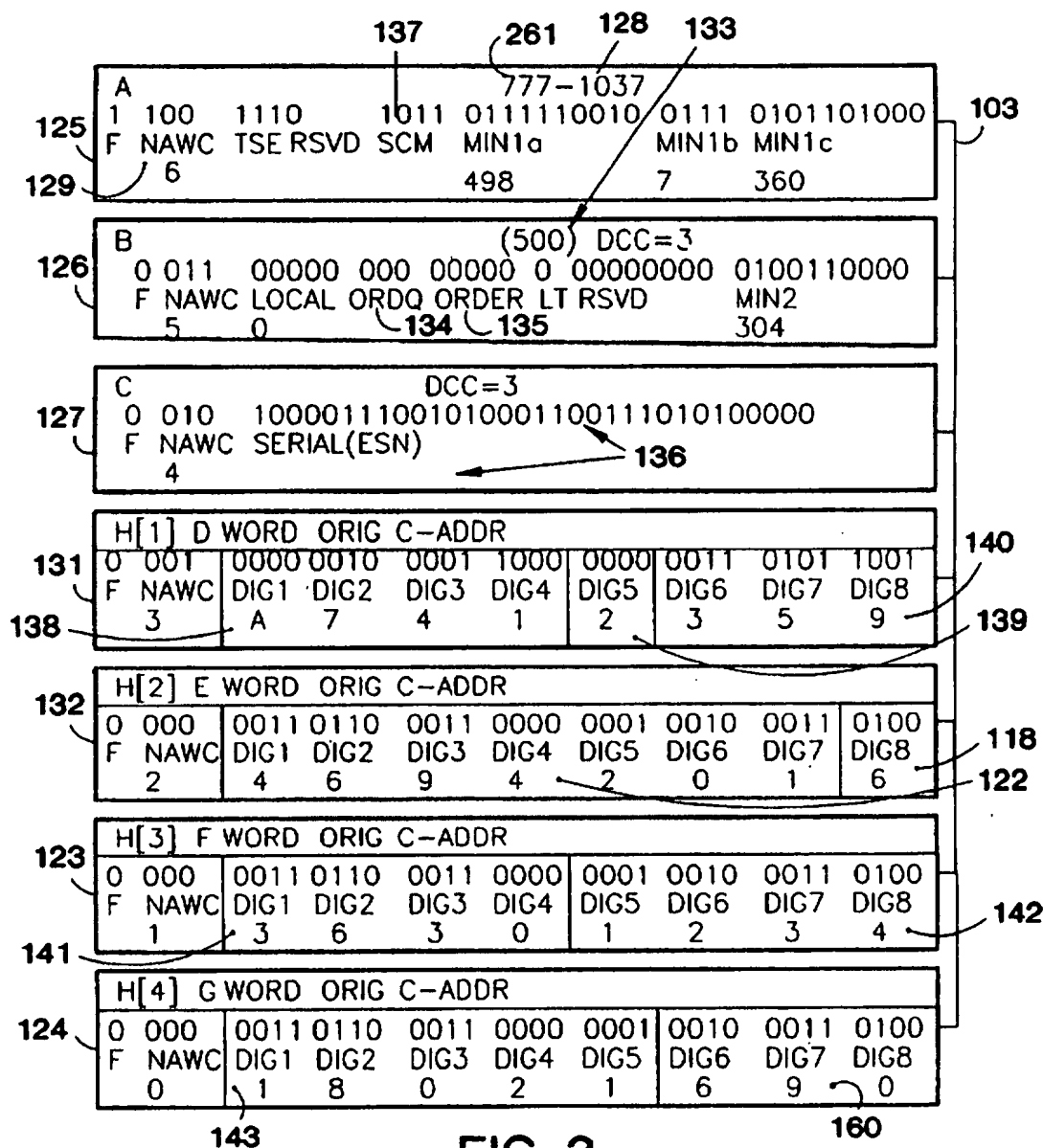


FIG. 3

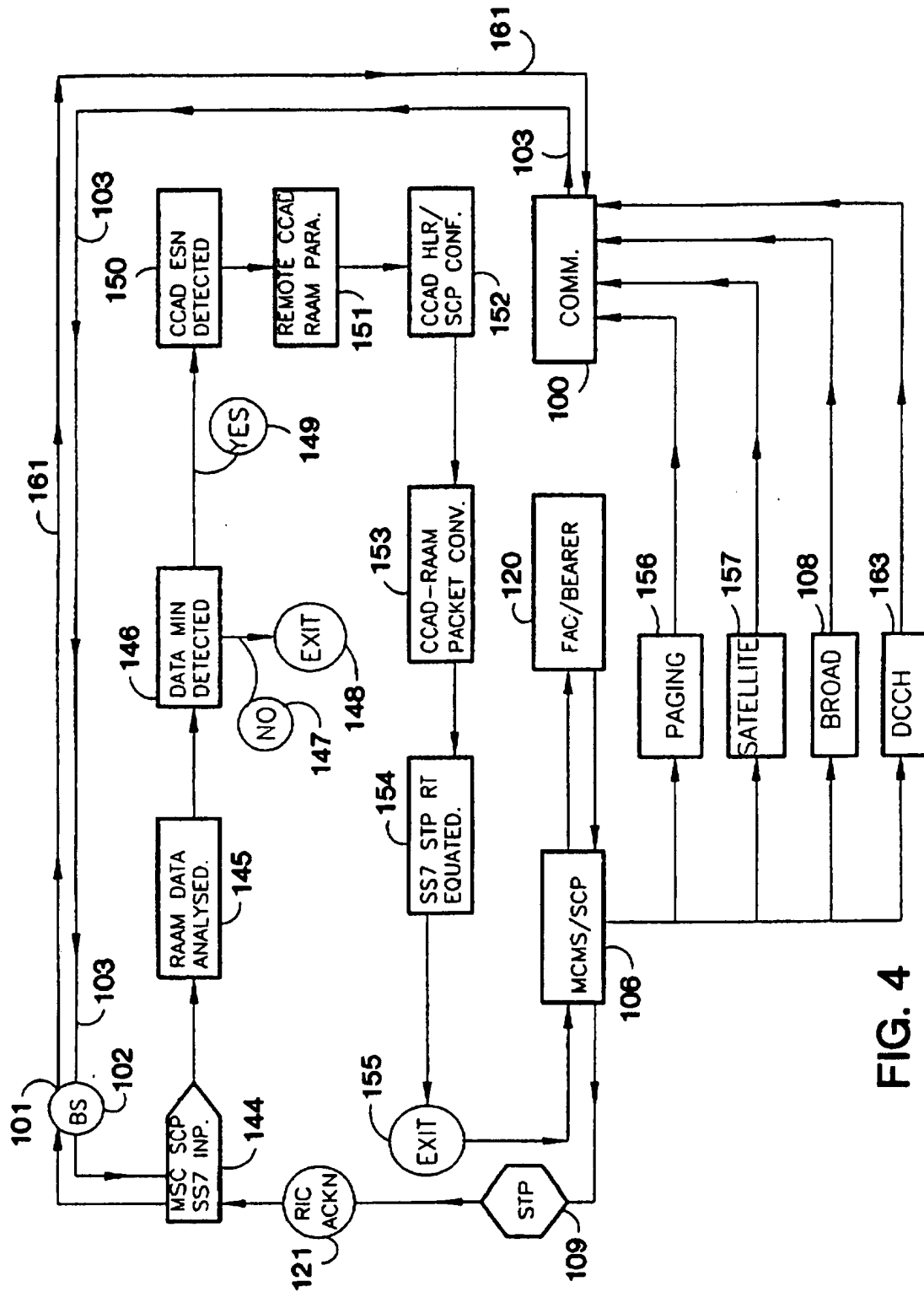


FIG. 4

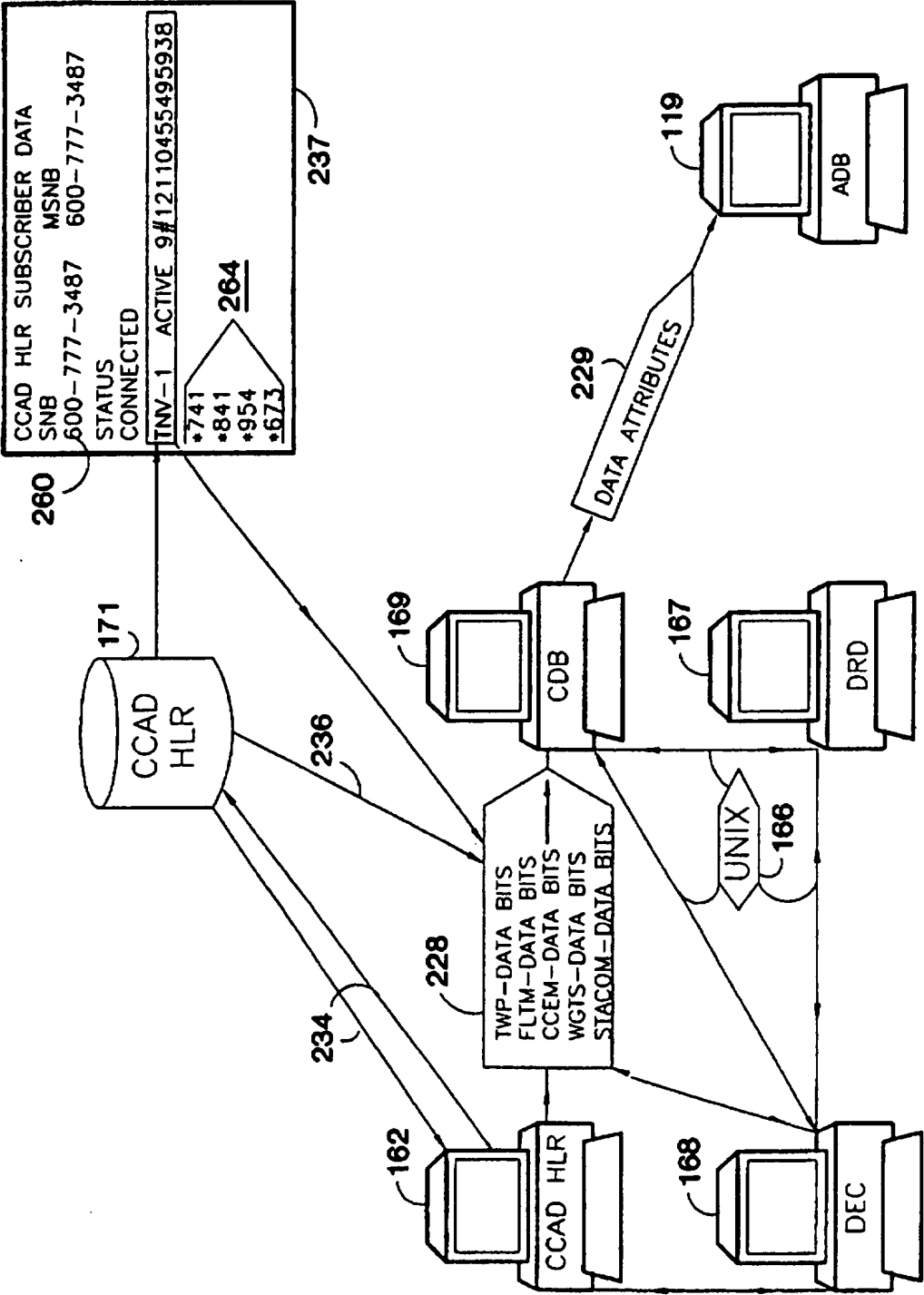
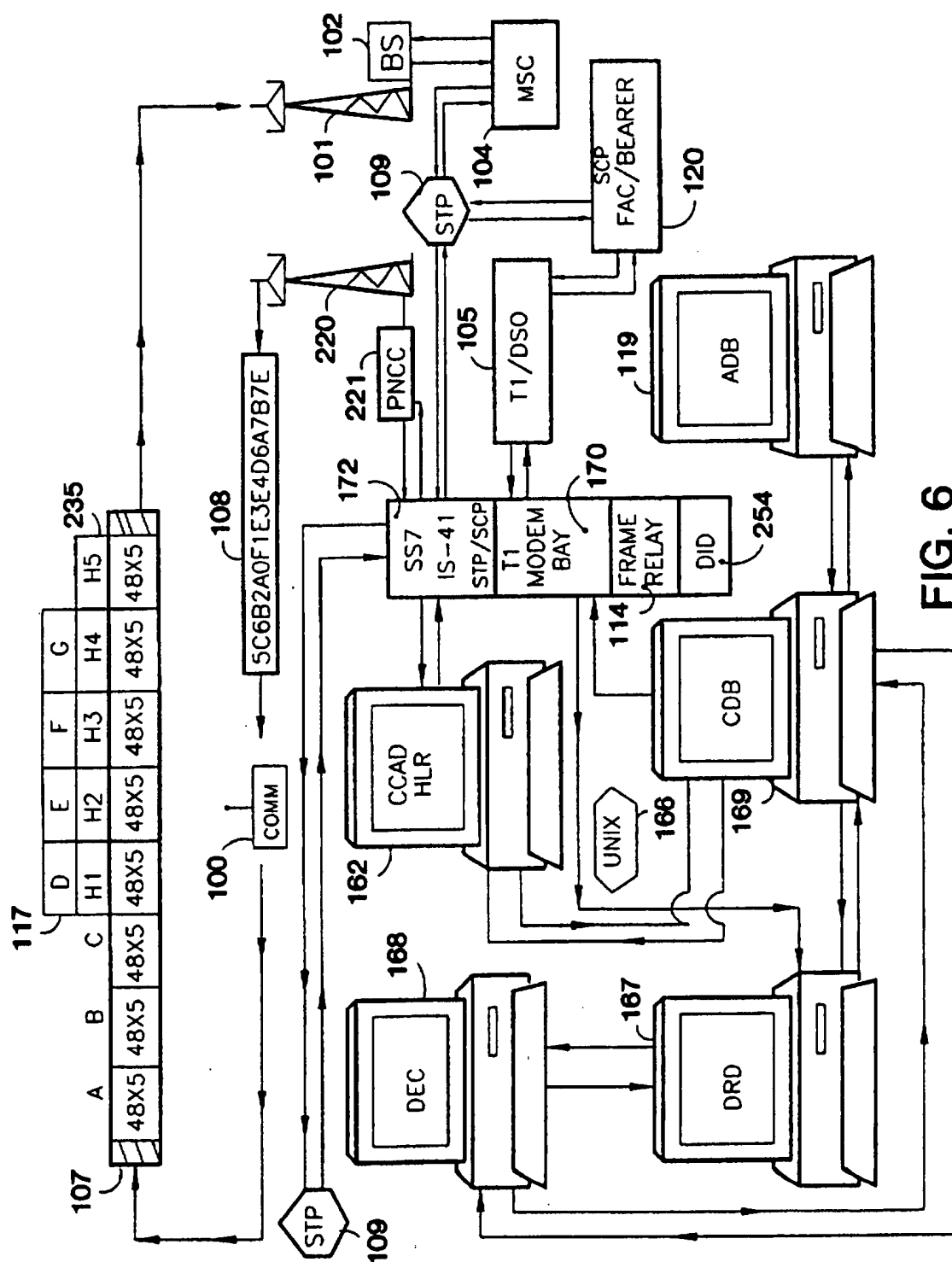
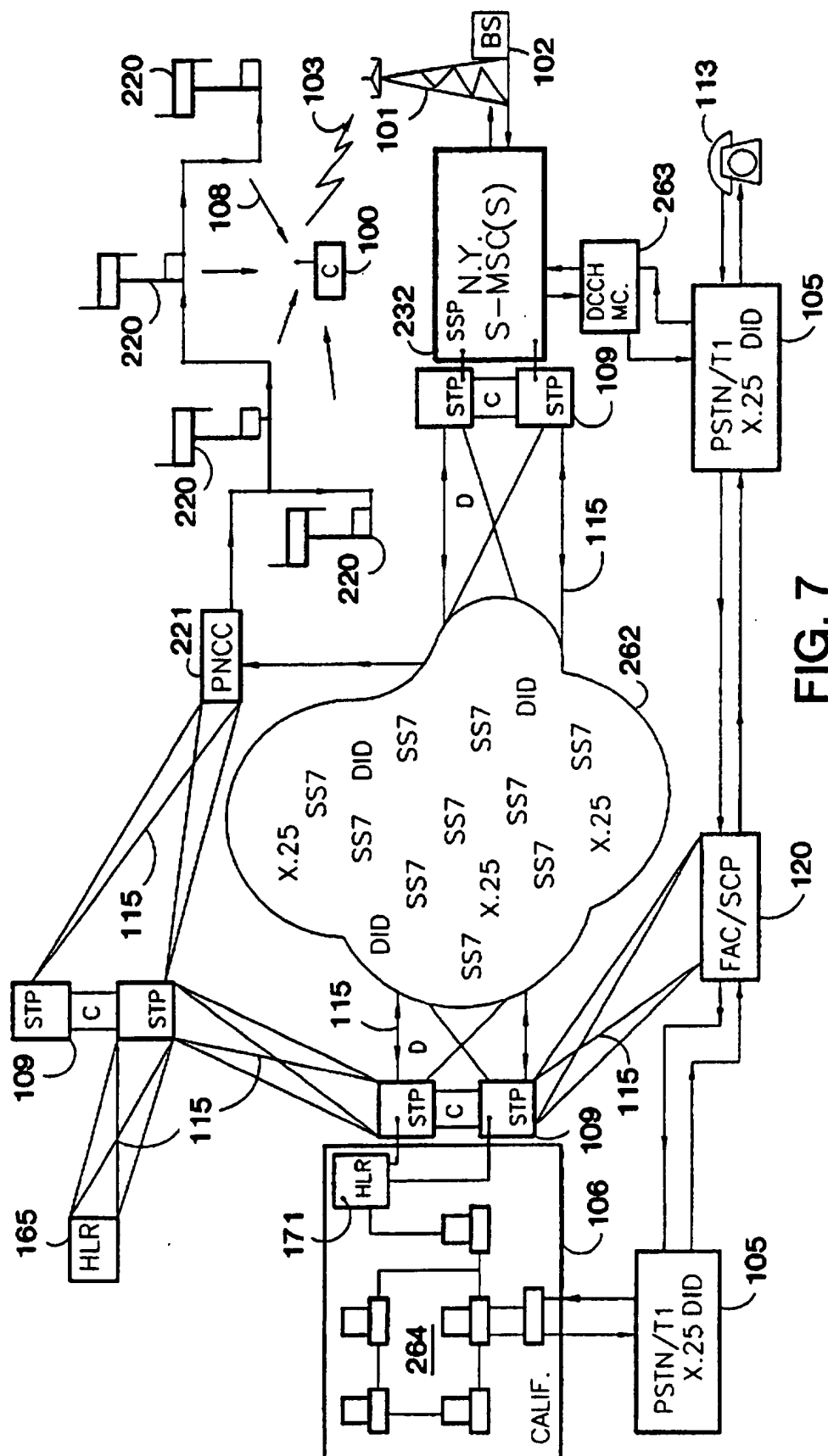


FIG. 5







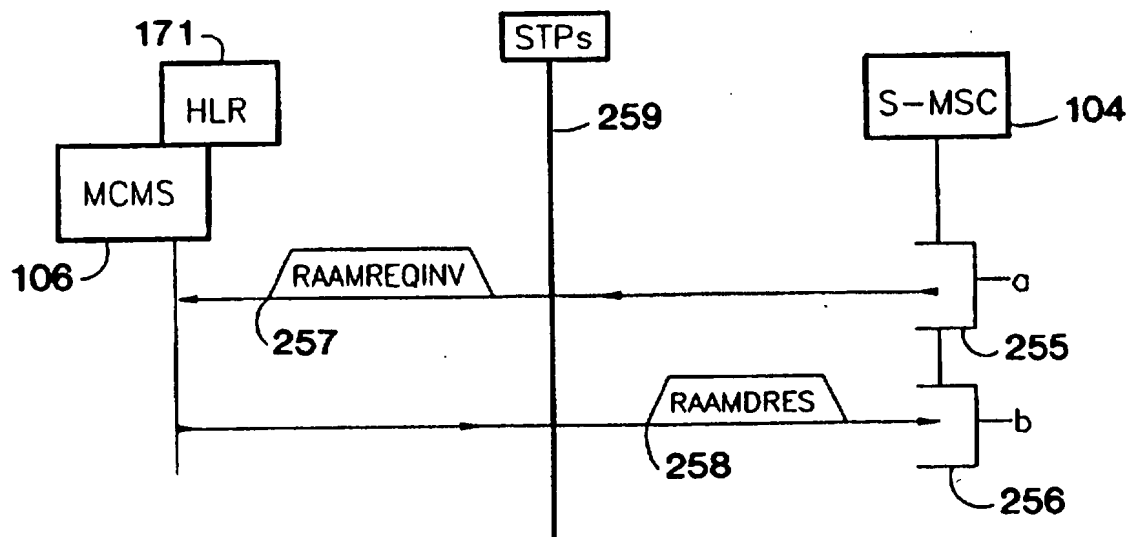


FIG. 8

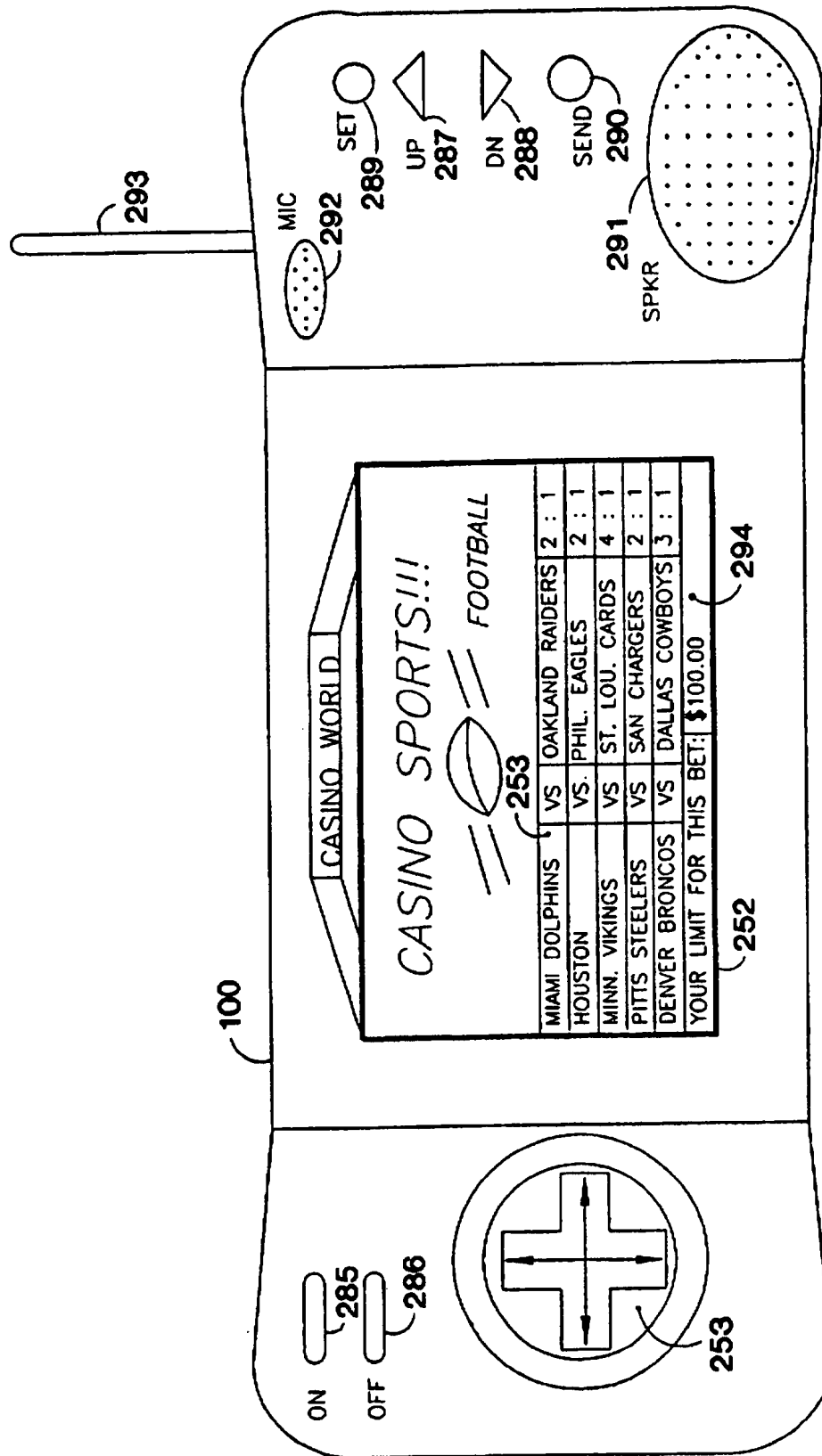


FIG. 9

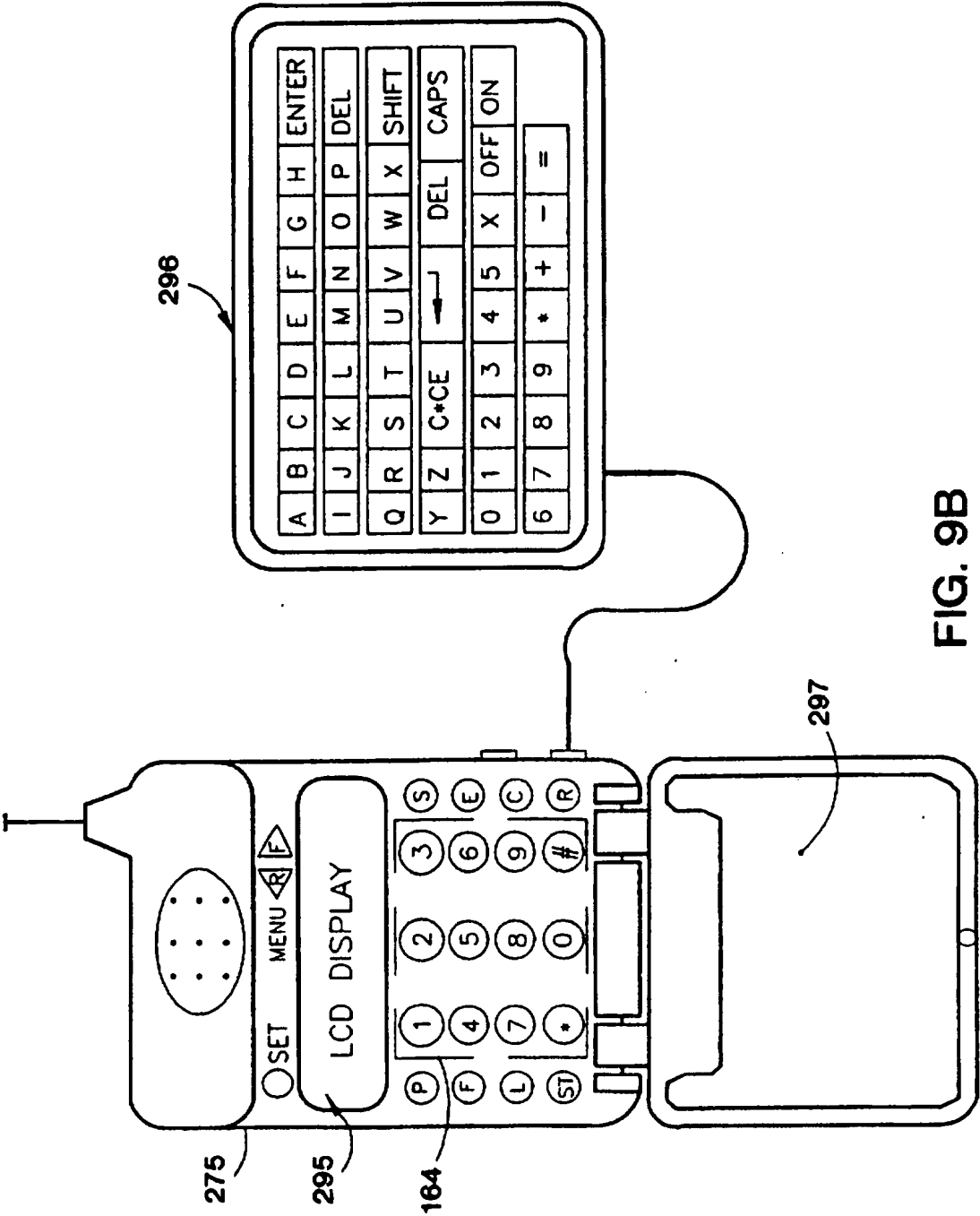


FIG. 9B

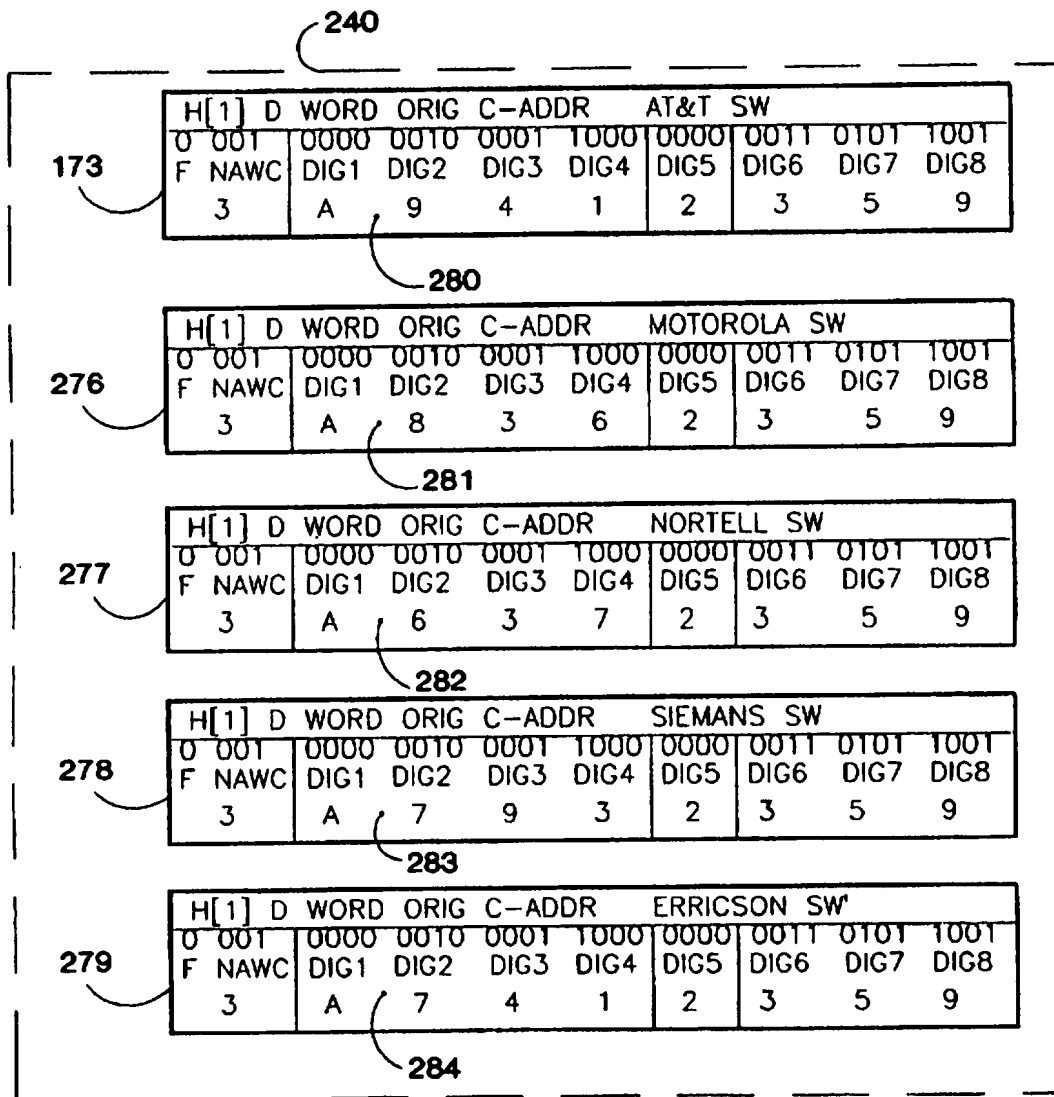


FIG. 10

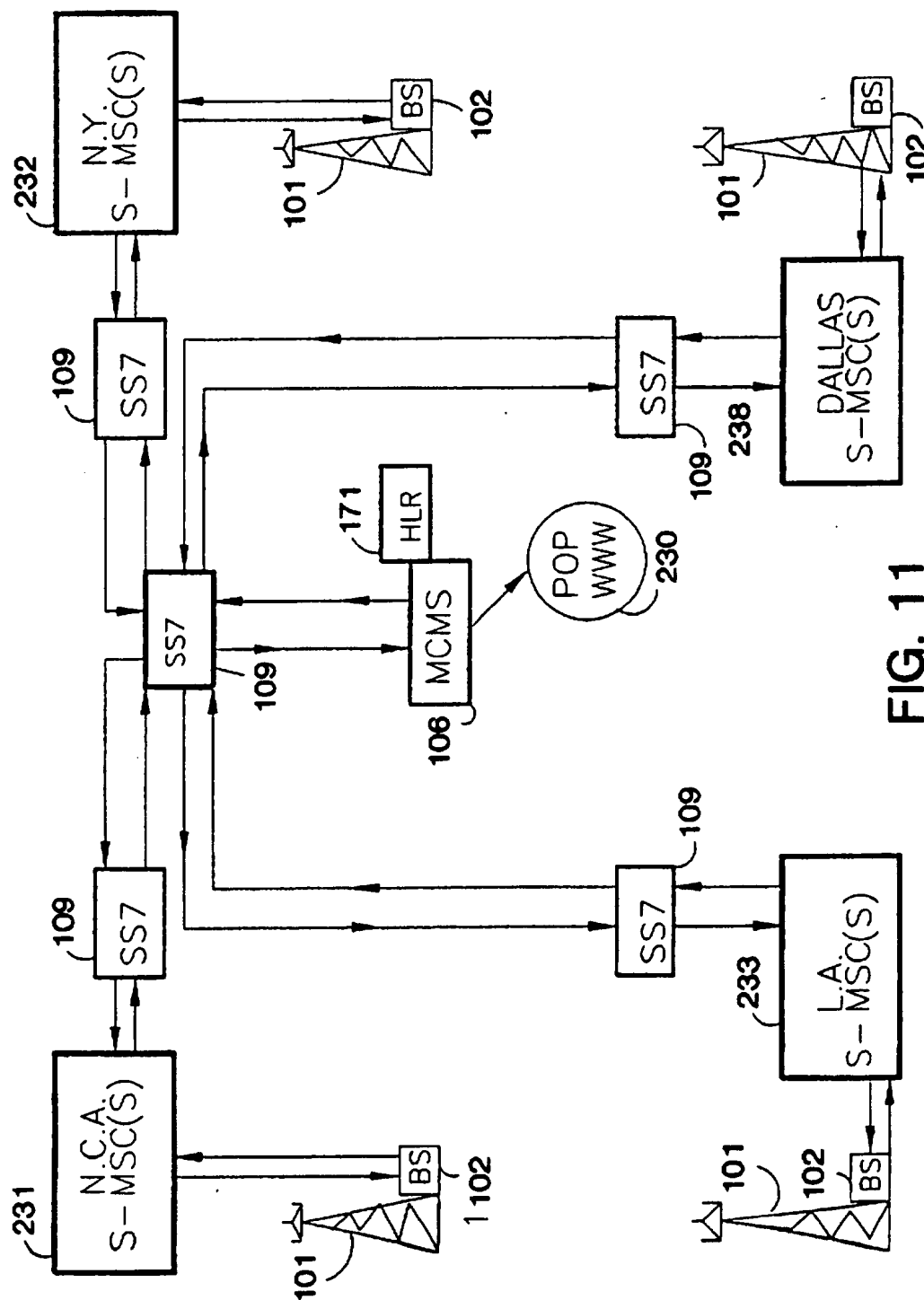


FIG. 11

## WIRELESS GAMING METHOD

This application is a continuation-in-part of application Ser. No. 08/571,347, filed Dec. 12, 1995, presently abandoned. This application is related to application Ser. No. 08/591,035, filed Jan. 2, 1996, presently U.S. Pat. No. 5,845,203.

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to a wireless gaming and gambling method and apparatus, and more particularly to wireless gaming and gambling methods utilizing wireless data communication networks such as cellular, paging and satellite networks.

#### 2. Description of Related Art

A variety of operation standards, methods, and apparatuses have been proposed in recent years for enabling two way data communication services. Cellular and paging companies such as Pageant, Skytel, Pagemart and others offer various means and methods for two way paging and two way messaging. So far, however, all of these proposed systems are inefficient, cumbersome, and expensive. For example, services offered include store-and-forward voice services. Such methods typically require the user to speak into a pager, store the voice, then send it, and then it is fed to the recipient. Other methods utilize narrow band personal communications standards (NPCS). Still other two way paging and two way short messaging methods utilize cellular wireless operations standards broadly known as Personal Communications Systems (PCS), Global System for Mobile (GSM), DCT-1800 (Digital cordless telephone), DCT-1900, 900 MHz GSM, Narrowband Personal Communications Systems (NPCS), and Enhanced Specialized Mobile Radio (ESMR).

The present invention provides a gaming and gambling method and apparatus utilizing a precise and controlled application data packet method that creates a separate but compatible continuous control application data protocol (CCAD) to existing cellular access protocols. The application data routine of the invention becomes a normal part of cellular system data management and remote feature control access management while providing a cost effective, highly flexible, and elegantly simple gaming and gambling method as well as a two way paging methodology that is easy-to-use, profitable to gaming house or organization, the cellular carrier, and affordable and practical for the consumer. Additionally, the present invention creates a virtual communications system by merging different communications mediums that are currently in operation today: cellular control channels, one way broadcast paging, signaling system SS7, X.25, frame relay, and other packet switched and circuit switched network technology.

The disclosed application for this new data communications platform is wireless gaming over cellular, paging, and signaling networks. This wireless gaming system operates in normal cellular, paging and signaling networks, both within and outside of building structures. The present invention also supports personal gaming transaction communications networks inside of large building structures such as gambling casinos and hotels in cities such as Las Vegas, Tahoe, and Atlantic City, etc. For example, there currently are many versions of video display based gambling terminals that display and support sports betting, the card game Twenty One, Poker, Keno, Roulette, and the interactive video based slot machines. These games are played in the traditional

fashion. It is an object of the present invention to migrate these video based as well as card and board games into a portable, two way data communications video game caddy, where a player can place bets from a remote location within a casino, or anywhere that legal gambling is permitted. This is accomplished utilizing the present invention's data communications methodology via cellular and personal communications system platforms.

### SUMMARY OF THE INVENTION

Accordingly, it is the primary object of the present invention to provide a wireless gaming method and apparatus utilizing a novel means and methodology for a two way short messaging communications system that utilizes and combines the data communications protocols of existing cellular network control channels, remote feature control request access procedures, one way broadcast paging networks, broadcast control channel (BCCH), digital control channel (DCCH) forward cellular time division multiple access (TDMA) messaging, X.25 signaling, and signaling system seven (SS7) protocols. The methodology is applicable on all cellular mobile radio networks including American Mobile Phone System (AMPS), Total Access Communications System (TACS), personal communications systems (PCS) and Global System for Mobile communication (GSM) networks.

It is another object of the present invention to provide specialized data protocols that operate seamlessly and without having to modify existing network cellular and paging network infrastructures. Furthermore, the present invention dramatically reduces the direct cost of implementing a wide spectrum of control channel application data (CCAD) two way short messaging services that until now forced wireless network operators to spend millions of dollars to implement inefficient and costly data packet systems that support very limited and expensive two way data communications systems. The present invention provides a novel and elegantly simple solution for implementing efficient, flexible and low cost two way data short messaging communications that include the seamless integration of cellular control channel, cellular switch remote feature control request access methods as detailed in interim standards IS-553, IS-54B, IS-95, IS-661, IS-136, and IS-41.3-B sections 3.8 to 4.3.1, making possible a virtual application specific two way smart data messaging system. This method provides an efficient and low cost approach to two way wireless gaming, two way paging, certified paging, smart paging, location paging, fleet management, motor vehicle anti-theft, anti fraud protection, home arrest, keep away monitoring, medical alert services, personal protection 911 services, law enforcement personnel management, remote sensor monitoring, utility meter reading, and other such services.

The present invention also provides an efficient communications pathway for Global Positioning System (GPS) data management, differential GPS, dead reckoning, Loran C data communications, and other location data management services currently which may be used for gaming and gambling applications as well as the aforementioned uses. It is another object of the invention to provide new data protocols that seamlessly fit within the existing access, signaling, control channel protocols, and digital access channel protocols used for cellular and paging networks without causing disruption to existing cellular and paging network voice traffic, data traffic operations, and normal control channel routines. Furthermore, the present invention does not significantly impact any host cellular and paging system capacity. In fact, the present invention does not cause any switching and network capacity problems. It is essentially a



stand-alone virtual control channel application data communications and signaling method that saves system bandwidth and does not need to utilize any major processing capacity of the cellular switch. However, the method of the present invention creates additional services such as wireless gaming and gambling, and can be adapted and fully integrated with all mobile switching center (MSC) switching and processing schemes manufactured and operating in the world today. This is accomplished with simple switch operations software programming and man-machine interface commands. These procedures allow for the recognition, processing, and routing of control channel application data (CCAD) data packets contained within reverse control channel (RECC) origination access packets that use dialed digit four bit fields to transport non-dialed, automatically derived encoded and non-encoded application specific data information including data related to games, wagers, rules, selected game protocols, and the like. Preferably the remote feature control code is not entered by the user. Instead, the present invention provides an automatic means and method to send specialized activation codes to activate unique switch routing instruction procedures that provide for a transparent access to the master central monitoring station's (MCMS) unique data management system present on the X.25 and SS7 signaling network. This seemingly slight but important software and command structure revision maximizes system efficiency while at the time minimizing any impact upon overall cellular system capacity. The present method adds application specific data words in a distinct and precise way. First, the method utilizes dialed number fields contained in cellular D, E, F and G reverse control channel (RECC) 48-bit words that are contained within multiword RECC data packets that transport user information contained within called address origination protocols, processed during conventional remote feature control request dialed digit code analysis, equipment registration protocols, home location register (HLR) access protocols, visitor location register (VLR) access protocols, and other system management and signaling protocols. Secondly, a distinct application specific data protocol is created that is transparent and transportable over existing analog and digital physical and logical access channels utilized by all analog and digital cellular standards in the world today. Thirdly, a separate and distinct data protocol is provided that is compatible and completely transparent with existing origination procedures and remote feature control request access procedures, paging network procedures, and SS7 protocols procedures, but completely different in terms of intent, usage, the end result including transmitting, processing and transporting the application specific data.

The present invention creates a totally new approach to short packet messaging system management by adding new service related functions to system access, origination, autonomous registration, remote feature control access procedures and other management methods without having to revise current cellular, paging and SS7 operations standards. The aforementioned physical and logical control channel protocols are transmitted from CCAD communications terminals to cellular system base stations, mobile switching centers (MSC), and subsequently relayed and routed via SS7 links to a master central monitoring station (MCMS). These data words are created and transmitted by core application specific communicators and terminals for the purpose of sending two way messaging responses either in a predetermined form or by utilizing a terminal keypad to send highly variable and individual text multi-character response, contained in conventional dialed digit D through G word

fields, herein designated H words, by the present method for application specific purposes. Other data that can be sent include global positioning system (GPS) correlative reference data bits, dead reckoning, Loran C data and other terminal, and/or application specific device status bits to master central monitoring stations (MCMS) that may process and relay said data words to individual system facilitators, service bearers and end users.

The present invention offers unique interface protocols that are programmed to provide a transparent integration of these device status bits, with physical and logical control channel and access channel bit fields that are normally used by analog and digital cellular terminals for host cellular system access, registration, origination, frequency assignment and other related physical and logical control channel and access channel processes. In fact, the present invention's application specific status bit fields are sent simultaneously with standard physical and logical control channel and access channel information bits contained in origination dialed four bit digit fields and are virtually transparent to the host cellular system. This same methodology can be used within the operations parameters of the IS-95 CDMA 800 MHz PCS standard. Specifically the highly variable data length digital access channel data burst fields that have a gross data rate of 4800 BPS. The IS-95 digital access channel is CDMA equivalent to the AMPS IS-553 analog RECC control channel, and therefore can be utilized by the present invention for the purpose of transmitting and capturing application specific data such as gaming and wagering data, as well as other application specific data previously mentioned.

Accordingly it is a further object of the present invention to provide both the means and method of reading and processing these special application specific data words at the mobile switching centers (MSC) and master central monitoring station (MCMS) without further taxing host cellular air-interface system and switch resource capacity. These special application specific data fields contained in the dialed digit spaces, and digital access data burst fields are part of an origination and system access procedure. They are received, scanned, and analyzed during the conventional Remote Feature Control Access Procedures and other logical channel procedures, and are embedded at the mobile switching center (MSC), and then routed to master central monitoring facilities via an SS7 link. The preferred method converts this remote feature control access procedure into a Remote Access Application Messaging system (RAAM). This application specific data is received, analyzed, and processed. Then the appropriate instruction set and the command or message is sent to paging network control centers and service bearer centers for direct interaction with a variety of end user application specific apparatuses via the PSTN, or SS7, X.25, DID links to paging, and the like.

Furthermore, the present invention provides for full duplex communications by fully integrating cellular transceivers and paging receivers that communicate together within specially designed and programmed end user CCAD communications terminals. Special instructional or command messages are sent from the Master Central Monitoring Station (MCMS) by electronic and man-machine interface terminals via the PSTN/PLMN and SS7 link networks, and other landline means, to designated paging network controllers that cue other paging controllers and paging transmission towers to transmit the message in a national and localized area. In turn, these instructional and command messages are subsequently transmitted to one or many CCAD communications terminals. Once the CCAD com-

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munications terminal receives the special command, instructional, or human syntax displayed alpha numeric message, it is programmed to automatically respond by processing, and recognizing the significance of the particular command message received from the paging network; then transmit the response unbeknownst to the user, or visually instruct the user via a liquid crystal display (LCD) screen to perform a function, and then transmit the response over physical and logical control channels, or signaling and access channels of host cellular networks, in the heretofore described manner.

The present invention also enables a new user locating feature to one way paging networks. By combining cellular network signaling characteristics with paging network signaling methods, a new communication system feature paradigm is implemented. For example, when a cellular mobile station registers, its authentication data is relayed to the home location register (HLR) of the mobile station's home cellular serving system. The present invention also utilizes its own HLR type service control point (SCP) data management system, located at its master central monitoring station (MCMS). An HLR typically contains authentication data including the most current system location of every paying user listed in that system. Every time a CCAD user registers and sends a CCAD-RAAM data packet to the MCMS HLR via the SS7 and/or X.25 link, it updates his current serving system location data file and sends an appropriate response to the serving MSC. For example, if the CCAD user, such as a gambler or game player, is located in New York City and the MCMS is located in California, and the user registers and simultaneously sends CCAD data, the New York mobile switching center will send that combined information to the MCMS via the SS7 network. When a CCAD application bearer facility needs to send a page, command, or other message to the CCAD user, a message is sent to the MCMS via the PSTN. Once the page query is received, the MCMS data processing terminals automatically interrogate the MCMS HLR/data base, verify the CCAD user's most current location and send the page via the host paging network's processing switches, network controllers and transmission towers located in that same cellular serving area. The present invention's MCMS utilizes paging network routing and specific system location tables, routing and parameter tables and other related information to send pages and paged commands on a national basis, but with the added advantage of utilizing a local paging network's system and capacity. Therefore, a CCAD user can sign up for national service, but only pay for local user costs. This method also enables small local paging networks to become part of a nationally deployed system without being physically connected with other paging systems. The MCMS connects paging networks and cellular networks together. The method described herein facilitates location services for a one way paging network that heretofore were impossible to provide with any modicum of efficiency. This method saves a huge amount of paging network capacity. With the present method, it is no longer necessary to send national, and large area regional pages to complete a paging transaction designated for one paging customer. If, for example, a gaming or gambling customer utilizes a CCAD communicator that combines cellular and one way paging, this important utility will be enabled. CCAD provides the means and method for paging networks to operate globally while concentrating on local serving system operations.

Another important feature of the present invention is its ability to provide accurate message accounting, in that each CCAD-RAAM data packet is considered an individual

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transaction. Therefore, the bearer facilitator may be charged for only the CCAD two way data packet sent, not for a blanket cellular per minute charge.

Additional objects and advantages of the invention will be set forth in part in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The object and advantages of the invention will be realized and attained by means of the elements and combinations particularly pointed out in the appended claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate a preferred embodiment of the invention and, together with a general description given above and the detailed description of the preferred embodiments given below, serve to explain the principles of the invention.

FIG. 1A is a logical block diagram of the CCAD-RAAM communications protocol according to the invention.

FIG. 1B is a block diagram of a preferred (CCAD-RAAM) control channel application data communications system and apparatus, according to the invention.

FIG. 2 is a logic flow diagram of CCAD-RAAM application data message and processing system according to the invention.

FIG. 3 shows a CCAD-RAAM analog FSK 10 KBPS RECC channel word block diagram, according to the invention.

FIG. 4 shows a logic flow chart of the CCAD-RAAM data packet MSC processing routine, according to the invention.

FIG. 5 shows a block diagram of CCAD-RAAM protocols and processing means used by the invention, according to the invention.

FIG. 6 shows a master central monitoring terminal and component configuration, according to the invention.

FIG. 7 shows the CCAD-RAAM cellular and paging virtual network, according to the invention.

FIG. 8 shows an illustration of the CCAD-RAAM SS7 data packet processing sequence, according to the invention.

FIG. 9 is an illustration of the CCAD-RAAM wireless gaming communicator, according to the invention.

FIG. 9B is an illustration of an embodiment of a CCAD-RAAM wireless gaming communicator, according to the invention.

FIG. 10 is a diagrammatic chart of the CCAD-RAAM application message encoding method for different cellular switch platforms according to the invention.

FIG. 11 is a diagram of a CCAD-RAAM multiple MSC network according to the invention.

#### DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in detail to the present preferred embodiments of the invention as illustrated in the accompanying drawings. In describing the preferred embodiments and applications of the present invention, specific terminology is employed for the sake of clarity. However, the invention is not intended to be limited to the specific terminology so selected, and it is understood that each specific element includes all technical equivalents which operate in a similar manner to accomplish a similar purpose. In accordance with the invention, there is provided a method for wireless gaming and gambling including

seamlessly transmitting application specific messages over cellular radio system control channels, digital access channels and switches, comprising: transmitting application specific messaging bits as a data packet configured to appear as an origination data packet having from eight to thirty two digit fields containing data related to an application specific system utilizing control channel means and cellular switch remote feature control request access means; transmitting the messaging bits over cellular control channels utilizing AMP, D-AMPS and TACS, FSK modulated reverse control channel (RECC) 10 Kbps 48 word BCH hamming coded control channel means, and CDMA access channel data burst means; and applying the messaging bits to communicate with, identify, monitor, and locate said application specific system, thereby allowing for an integrated application specific two-way communications system.

There is also provided, in accordance with the invention, a method for transmitting application specific gaming and gambling messages over cellular radio system control channels and switches and converting data within a control channel application specific communicator configured as an integrated paging network receiver and cellular network control channel application specific and dual mode AMPS/CDMA transmitter, the method preferably comprising the steps of: receiving gaming and gambling data commands and instructions from a paging network; processing the data commands and instructions; and transmitting automatically application specific data status messages as a data packet configured to appear as an origination packet having from eight to thirty-two digit fields over AMPS, D-AMPS and TACS FSK modulated reverse control channel (RECC) 48 bit BCH hamming coded control channels, utilizing compatible control channel protocols, and CDMA access channel data burst 4800 BPS protocols, allowing for an integrated application specific two-way communications system utilizing existing cellular radio networks and paging networks, thereby creating a control channel and digital access channel application data virtual communications system.

Referring to FIG. 1A, a preferred methodology for wireless gaming and gambling is shown where a CCAD communicator receives a message, such as gaming data, wagers, rules, or the like, from a paging network 219, and the CCAD communicator reads a received paging message 220. Communicator 100 evaluates the message, whether its an alpha/numeric message or coded instructional message 221, and responds or does not respond 222, to the received message from paging network 219. The CCAD communicator preferably does not communicate to the CCAD virtual network if there is no reason in terms of differentiation of communicator internal system status. If the CCAD communicator needs to respond 223 to a paging network message, it creates a record, scans the cellular carrier's forward analog control channel or forward digital IS-95 CDMA access channel carrier radio wave 224, detects protocol compatibility indication bits (PCI) that determine if the serving system is CDMA compatible or not; if compatible the CCAD communicator handshakes with forward channel carrier wave 225, in either digital or analog training protocols, and then synchronizes with the analog or digital air interface protocol 226. Once synchronization and handshaking is complete, the CCAD communicator bursts its CCAD-RAAM analog or digital access channel data burst packet 230. The base site preferably accepts CCAD-RAAM data packet 231, and relays a CCAD-RAAM data packet to mobile switching center (MSC) 232. The mobile switching center (MSC) then analyzes the CCAD-RAAM data packet 233. The MSC

processes the packet by detecting a specialized data only RAAM code and CCAD-RAAM mobile identification number (MIN) and electronic serial number (ESN) 234. Once detected and recognized, the MSC determines the CCAD-MCMS SS7 link, X.25, or 56 Kbps frame relay destination instruction code that results from decoding the specialized embedded non-voice MIN and ESN 235, and sends the packet over that designated SS7 link 235, and it is received at the master central monitoring station (MCMS) 236. Once the data packet is processed, the MCMS routes the data packet to the bearer facility 237. The bearer facility evaluates the status of the bits contained within the packet, and chooses either not to respond 238, or to respond 239, by sending a command request to the MCMS 240 via the PSTN T1 or dial in direct (DID) via normal telephone lines. The MCMS then receives, accepts and verifies the command request 241. The MCMS then creates the command data packet 242, and subsequently sends the command data packet to the CCAD communicator 243 via paging network 244, and/or via satellite network 245, and/or via forward analog control channel FOCC 246, and/or via forward digital access control channel (DCCH) 247, and/or via cell site broadcast channel (BCCH) 248. This aforementioned protocol process may be used for all manner of gaming, wagering, and other application specific messaging and operates in this general manner with all cellular air interface and network standards. Additional component parts and operational procedures of the CCAD-RAAM virtual network are depicted in FIG. 1B, as described below.

Referring to FIG. 1B, the CCAD-RAAM virtual network preferably comprises: a CCAD mobile communications gaming terminal 100, a plurality of base sites (BS) 101, a plurality of mobile switching centers (MSC) 104, and multiple SS7 or X.25 links 115 that operably connect master central monitoring station (MCMS) 106 to each mobile switching center (MSC). A UNIX-based man-machine interface terminal 116 is preferably located at each MSC 104, with a plurality of application specific facilitator bearer service providers (FAC) 120 communicatively linked to a plurality of global positioning Navstar satellites (GPS) 112, Inmarsat P satellites 114, and cell broadcast transmitters located at and integral to the base site. The method of the present invention preferably utilizes paging network controllers (PNCC) 221 and satellite system network controllers 109. Additionally, the CCAD-RAAM network includes interactive means including PSTN via T1/DSO interfaces 105 and caller access via a plurality of conventional landline telephone access 113. An alternative to paging is a downlink path via an IS-95 and IS-136 DCCH forward message system that is accessed via the DCCH message center (MC) 263, which can be situated at a separate facility, or co-located at a participating MSC.

The CCAD-RAAM system of the present invention can be configured with the following cellular operations standards: AMPS cellular, TACS cellular, ETACS cellular, NMT cellular, TDMA cellular, CDMA cellular, and/or a Global System for Mobile communication (GSM) cellular network systems. The present invention operates in essentially the same protocol and network methodology regardless what air-interface protocols and modulation formats a particular cellular system's control channels, access channels and overhead signaling channels are configured for, be it digital or analog. Furthermore, the base sites (BS), mobile switching centers (MSC), PSTN, and SS7 links are, preferably, part of an existing cellular communications system which operates over a designated cellular communications band. Thus, details of their construction and operation are known to those of ordinary skill in the art and descriptions thereof are omitted.

Referring now to FIG. 1B, the MCMS 106 and FAC 120 are both CCAD-RAAM virtual network system elements. Each element or facility is preferably comprised of one or more computer terminals for processing data word packets, sending specific device status messages to each facilitator 120, sending communicator device maintenance and system upgrade messages, and specific commands and automatic instructions to end users. Furthermore these facilities are designed to send alpha and numeric messages to users for normal information transfer, and for constantly updating current user serving system location parameters. MCMS 106 and FAC 120 also contain standard telephone lines, GPS, differential GPS, Loran C, dead reckoning and other topography tracking software, and readout displays, multiplexing switches, frame relays, SS7 links, PSTN X.25 lines, T1/E1 lines, and other standard central monitoring and service center equipment widely known in the art, and descriptions thereof are also omitted. As will be explained in more detail below, the MSC, MCMS and FAC process all receive CCAD-RAAM data word packets and configure all command messages, alpha-numeric messages, maintenance instructions and automatic instruction data words to be transmitted to the end-user, and are governed by operating software programs contained within the processors and terminals located at the CCAD-RAAM installations.

Each CCAD-RAAM multi-word FSK RECC analog packet, or CDMA data burst packet 103, that is transmitted from a CCAD gaming communicator 100 contains location GPS bits and other pertinent application specific status bits that relate to gambling transactions for various sports betting and other game information. This particular packet is designed to operate within the parameters of the American Mobile Phone Standard (AMPS), Total Access Communications System (TACS) cellular system, and/or IS-95 CDMA control channel, access channel and network protocol processing routines. Additionally, FIG. 2 illustrates how the CCAD data packet is created, transmitted, recognized, analyzed at the MSC, and transferred via SS7 links to the MCMS.

With specific reference to FIG. 2, a CCAD data packet 103 is shown utilizing a plurality of 48 bit words designated herein as H1 through H4 235, or a CDMA digital access channel packet 222. Each 48 bit analog word is made up of 36 information bits and 12 parity bits, and is specifically designed to contain and carry application specific data bits such as GPS correlation location position bits and other mentioned CCAD status bit information. The CDMA word 222 is an access channel capsule that contains the same application specific data information configured differently for that protocol, the bit arrangements are different. For example, the access channel message 223, is used for implied originations, or page responses from the serving system. The CDMA access channel message is made of a plurality of operating components. This message contains padding bits 224. Padding is a sequence of bits used to fill from the end of a message to the end of a message capsule, typically to the end of the frame or half frame when a serving CDMA based system is operating in a half capacity rate mode. Padding allows the message content to be variable in length, therefore, the quantity of padding bits is directly dependent upon the length of the message body sent. This feature lends itself well to application specific messaging on CDMA digital access channels, wherein message body content can range from two bits to 842 bits; this approach allows for up to 210 CCAD application specific characters to be sent in one data burst message. The message length is a specified number of bits. Since the message body 226 can

vary from two to 842 bits in length, the message length indicator field is also variable in its content but not in its length. Additionally the MSG L indicator 265 is preferably an eight bit field that tells the base site that the message length is a defined quantity. The CRC field 225 is a 30 bit field that contains error correction bits. An access channel slot length may differ from base station to base station. The CCAD-CDMA communicator shall determine the beginning and length of the access channel slot prior to transmission. Each CDMA access channel frame is 20 ms in duration, and most access channel transmissions take up the entire assigned coded slot. Another important part of the access channel data burst message is the class of message indicator. This indicator instructs the base site and switch to analyze the message type and perform message content tabulation. This type of tabulation is very similar to the remote feature control request access; dialed digit procedure heretofore mentioned. Access channel message types are codified in defined indicator fields, much in the same way that the B word in the RECC message contains order and order qualifier codes. The CDMA digital access channel message contains originations and registrations and page responses. The distinct advantage of the CDMA digital access channel protocol is that it allows for a higher degree of message length and variability when comparing it to its AMPS and TACS counterpart.

The particular AMPS and TACS RECC analog protocol shown 107 allows for up to eight words to be sent in one RECC multi-word data packet or data burst. However, most cellular switch configurations used in the United States may accept five RECC 48 bit words, and some will allow for seven words to be received and processed. The preferred creation, transmission, and management methodology is as follows. Most CCAD analog applications require no more than two H words to be transmitted along with the other three CCAD communicator identification and service information words. However, certain CCAD applications will require only one H word to be used, and others will require up to four or five H words.

Referring now to FIGS. 9 and 9B, the CCAD gaming communicator 100 is preferably configured similarly to operate like a portable video game caddy. It has a full color liquid crystal display 252, a toggle control 253, a power on button 285 and a power off button 286. These buttons control game caddy power and cellular and pager circuit power. The game caddy contains a normal 900 MHz paging receiver and a normal cellular transceiver with modified CCAD software that is compatible with AMPS analog cellular, TACS analog cellular, TDMA IS54/136 cellular, GSM TDMA cellular, or IS-95 CDMA cellular. The game caddy can be configured as a dual mode cellular transceiver and can operate both in analog and digital platforms. The game caddy can also contain a differential GPS receiver. This feature is necessary for gaming casinos to track the assigned user. Another configuration that may be utilized is to establish an in building personal communications network that is compatible but yet distinct from the cellular and paging networks heretofore mentioned. The in-building PCN network manages the gaming caddies, and also provides relative location in terms of its stationary transceiver nodes. There are many ways to configure the unique gaming system. The CCAD gaming unit also can be configured as a full voice service support system by including a handsfree microphone 292 and a speaker 291, so that the user can place calls to the casino control center for various information, etc. The CCAD game caddy can also be used as an advertisement and information medium. For example slow scan video images

can be transmitted over the paging network, and downlinked to the game caddy. Casino events, airport flight information, other travel information, the best gaming odds, all can be transmitted to the CCAD gaming caddy. To place a bet on a sports event, the user scrolls a menu using the scroll up button 287 and the scroll down button 288 that depicts gaming choices, to choose anything from the game Keno to electronic poker. In this example, a sports betting screen depicts the day's football choices on the LCD display 252. Once a team is chosen by simply toggling over to the selection with toggle control, so indicated by a movable colored rectangle cursor, the user then selects the bet amount 294 depicted in the screen, presses the set button 289, then presses the send button 290. The CCAD gaming caddy then transmits the bet codes, user codes and authorization codes that complete the transaction. The gaming information is managed in the same manner as other CCAD applications. The CCAD gaming system can be used by any hotel or casino to provide on site and off site gambling where ever the local laws allow for this type of sanctioned activity. The CCAD game caddy can be carried anywhere there is a cellular and paging system that supports CCAD and within an metropolitan statistical area (MSA) that allows for legal gambling.

In FIG. 2 and FIG. 3, the CCAD-RAAM H-word packet can be utilized in other applications other than gaming, such as two way paging. An additional burst can be transmitted a second time that enables a two burst transaction, and allows for the communicator 100 user to send up to 72 characters to the person who initially paged him or her. Using a PDA keypad, the user can send personalized messages to whoever pages him, and does not have to be limited to "canned" or embedded responses. In the CDMA mode the user can send up to 210 unique characters in single burst. However, the communicator 100 user can transmit canned responses that are embedded in the communicator software, and accessed by the user via a menu display, if response time is a factor. Another important feature is that instead of utilizing traffic channels and specialized modems, these messages are sent via control channels with CCAD communicators without the need of specialized modems, creating a direct protocol-to-protocol data link. This keeps end user equipment cost extremely low, in fact no more than a normal cellular phone, and maintains a simple and efficient communications methodology.

The present methodology and apparatus thus creates a personal communications system (PCS) handset with all the features of the PCS but with additional advantages. Additionally, some digital access and control protocols, other than IS-95 CDMA, allow for up to 184 CCAD-RAAM data bits, and an unlimited application specific data packets to be attached to registration packets, origination number packets, and other signaling packets. In still other cellular radio digital systems, application data packets can be sent independent of all other access protocol routines, as stand-alone CCAD-RAAM packets, as long as a designated cellular control channel and access channel operations standard allows for separate and independent application specific data word packets to be transmitted, received, recognized and processed. But, for purposes of explanation, the FSK RECC 48 bit multi-word packet, and the CCAD-CDMA 842 bit packet will be the focus of this disclosure.

In FIG. 3 is a block diagram of a FSK RECC 48 bit CCAD-RAAM data packet with four H words attached, and depicts the three A, B, and C preamble words of this basic CCAD-RAAM packet, illustrating an example of the significance of each information bit. This FSK RECC 48 bit

data packet is in fact a separate and distinct CCAD-RAAM air interface and short message enabling protocol that is a significantly modified, yet transparently compatible AMPS, D-AMPS and TACS control channel and switch feature activation protocol. This CCAD-RAAM protocol operates, and is initially treated and recognized by the mobile switching center (MSC) as an origination protocol, but once received at the switch, and the first four digits 138 of H[1] word 131 are analyzed (containing \*741), the MSC does not "grab" a voice channel as normally occurs during an origination procedure.

Origination procedures are typically used to initialize and activate voice calls, but the present methodology only uses the origination order qualifier code 134 and order code 135 contained in the B word 126 to cause the base site and switch to allow the CCAD-RAAM packet to pass and be processed transparently, without the need of changing base site and switch software routines. Base site and switch software revisions are generally expensive and comprehensively involved to execute by cellular carriers and switch manufacturers. Specially designed CCAD-RAAM codes that are placed in the first four digit spaces of the H[1] word cause the mobile switching center (MSC) to recognize this distinct protocol as a conventional remote feature control request that is yet another feature of origination procedures. Remote feature control requests are typically used to allow the user to see if there are messages waiting for him at his home cellular system. This remote feature control request can also cause his landline telephone calls at home or office to be routed to his mobile phone automatically. However, never has this feature been used in reverse, and as detailed and described herein, to send messages from a CCAD-RAAM communicator to a remote facility such as a master central monitoring facility (MCMS) a service control point (SCP) on an SS7 network. Combined with conventional one way paging, this new CCAD-RAAM system, that is derived from conventional technology, creates a new paradigm that provides a wide range of services for the wireless industry. Therefore this depicted packet is in fact a control channel application data (CCAD) remote access application message (RAAM) protocol specifically designated to be utilized by remote access application messaging (RAAM) systems and application specific bearer services, such as a gaming casino or other gaming operation as a facilitator. The CCAD network protocol enables an endless variety of CCAD-RAAM short messaging application specific services.

As further shown in FIGS. 1B, and 2, the CCAD-RAAM communications terminal 100 is preferably configured to operate within the parameters of AMPS, NAMPS, DAMPS, TACS and ETACS cellular standards. The CCAD-RAAM communications terminal 100 transmits a CCAD-RAAM data packet 103. The MSC 104 switch software is normally programmed to receive and recognize CCAD-RAAM data packets and automatically route the packets to the MCMS 106 via multiple-redundant X.25 and SS7 links 115. In fact, the entire CCAD-RAAM data messaging system can be implemented and integrated with any cellular network and its operations standard without any software patch modifications performed at any MSC operating software, and without any need for adding separate infrastructure hardware, as is the case with other data systems, such as cellular digital packet data (CDPD). Therefore, the present invention provides an invisible CCAD-RAAM network overlay system that in fact creates a separate and distinct CCAD-RAAM virtual network that operates in tandem but transparently to the host cellular network. In FIG. 1B, the CCAD-RAAM communicator 100 preferably transmits an

application specific data packet 103, depending upon the air-interface protocol format of the serving cellular system, which is received by the base antenna 101, passes through the base site (BS) 102, and is received by the mobile switching center (MSC) 104. The packet is then analyzed and sent to the MCMS 106 via redundant SS7 links 115. Once received, the MCMS interrogates its own home location register, retrieves the data information contained in all received H words, regardless of the point of origin, derives the application specific status from this received digits, stores and processes the results, and if applicable, sends the status data to the facilitator/bearer 120 via redundant SS7 links, and/or T1/DSO 105, or direct in dial (DID) pathways provided in the public switched telephone network (PSTN) 110. The facilitator bearer can be a gaming casino, or any other relevant facility. Once received at the facilitator/bearer facility 120, the data is analyzed. If a response is warranted, the facilitator sends a message and message request to the MCMS 106 via the PSTN or SS7 network. Once received, the MCMS 106 interrogates its own home location register (HLR), retrieves the user's most recent serving cellular system location, looks up the paging company that serves that particular geographic service area (GSA), coordinates and establishes its routing tables, and sends the message to the paging network control center (PNCC) 221 via redundant SS7 links, or via PSTN and T1/DSO network circuits. The paging network controller transmits the message to the user via one or more transmission towers 220. The message sent can contain all types of information including gaming, gambling, play moves in games such as poker, blackjack, chess, checkers, roulette and the like, game rules, or of course, any other application specific message as previously discussed. Or the message can be a simple phone number that tells the user to call a person that paged him. Or if the CCAD-RAAM communicator 100 is equipped with a GPS receiver, the message can be an automatic command that causes the communicator to perform an automatic location update by correlating GPS Navstar satellite 112 C code timing bits, for example, and derive an accurate relative location. Once the relative location update is performed, the new location is systematically derived and compiled for H word transmission. This procedure demonstrates a totally separate but transparent procedure, thus creating a CCAD-RAAM virtual application specific network. This CCAD-RAAM technique allows for applications such as gaming, gambling, or other application specific applications such as two way paging, fleet management, motor vehicle anti-theft and recovery, home arrest, personnel management, remote stationary sensor management and many other application specific purposes.

Referring now to FIGS. 1B and 3, a man-machine interface 116, typically located at each mobile switching center (MSC) 104, is used to update call treatment routing tables and call performance parameters. In compliance with IS-41 call treatment procedures, various remote feature control access codes can be created without modifying switch and base site software. For example code \*741 activates a procedure that causes all dialed digits to be sent to a remote home location register (HLR). The switch examines and analyzes the mobile identification number (MIN) that is assigned to the CCAD-RAAM communicator 100 and contained in the A word 125 and B word 126. The MIN office code 261, XXXX code 128 and number plan area (NPA) area code 113, cause the switch to assign the CCAD-RAAM packet to an SS7 link, that will ultimately cause the packet to arrive at the MCMS. Once the packet arrives, the MCMS processes that packet, and sends a confirmation indicator

packet to the current serving MSC that originally sent the CCAD-RAAM packet. Once the conformation packet or routing instruction code (RIC) is received, the serving MSC can send a completion parameter on the overhead forward control channel (FOCC) to the CCAD-RAAM communicator, and if the CCAD-RAAM communicator has voice capability such as a two way paging communicator, a conformation tone is sent to the user to tell him the CCAD-RAAM message has been received. In still another scenario, the serving MSC can cause a recording to be sent to the user that says "Your message has been received", for example. Or no recording or beep tone need be sent. This is especially valuable for CCAD-RAAM applications that utilize no voice capabilities. Such methodology may all be configured at the switch by simply entering parameters in conjunction with existing remote activation codes used in cellular industry, or special CCAD-RAAM codes can be created and entered at the man-machine interface (MMI) 116, while still adhering to current, conventional IS-41 operations parameters. Thus the present invention takes existing data, and manipulates this data to create a new application specific data, without having to add new hardware or software at the base site and mobile switching center.

Referring to FIG. 1B, in still another example, the mobile switching center (MSC) is configured with the digital TDMA IS-136 or IS-95 CDMA digital control channel (DCCH) one way messaging service that provides notices, message waiting indicators and other alpha text services to a user on the forward digital traffic channel. By combining this one way service with CCAD-RAAM, another important and transparent two way messaging system is created. For example, the DCCH message center (MC) 263 is connected to the PSTN 110 via T1/DSO 105 or other signaling protocol. In a typical scenario, a landline caller 113 places a page or message to the cellular user via the DCCH MC 263, and the message is transmitted on the forward digital traffic channel. But the only choice the user has to send a response message is by placing an expensive voice call. If, for example, the user is in a business meeting and cannot make a voice call, using the CCAD-RAAM he simply takes his communicator and sends a response to the call. Still the DCCH feature, combined with CCAD-RAAM, can be used to implement a truly enormous amount of application specific services heretofore mentioned.

CCAD-RAAM combined with DCCH can create another communication paradigm without using one way broadcast paging. The MCMS 106 can send messages, instructions, commands and other data to the serving MSCs DCCH MC 263 via the PSTN 105. Current user information is utilized with DCCH in the same means and method that has been described in the paging system scenario, that is, user location is derived in terms of the current serving cellular system from the switch when it sends the CCAD-RAAM packet to the MCMS 106 via the SS7 network. Under current IS-41/SS7 guidelines, the serving MSC or switch sends carrier identification codes (CIC) with every outbound message sent on an SS7 link. Therefore, when the CCAD-RAAM MCMS receives the CCAD-RAAM packet, the MCMS analyzes the CIC code contained in the received CCAD-RAAM packet and identifies the sender as a particular serving cellular system located in particular network, such as the North American Cellular Network (NACN) or the Mobilelink ITE Network located anywhere in the U.S., or any network tied into any host SS7 network in the world. There is also specific serving cellular switch identification bits contained within the received CCAD-RAAM data packet. Therefore, the MCMS can send a response message



to the user via DCCH or the paging network by simply comparing the received identification and routing information to known paging and/or DCCH message center location information and sending the command, alpha or numeric message to a particular CCAD-RAAM communicator user.

In still another scenario, the CCAD-RAAM communicator 100 can be configured to receive Inmarsat P signaling from an Inmarsat satellite 114 that is controlled by a satellite system network hub or controller (SSNC) 109. Any satellite can be used such as FM sideband satellites used by paging companies to transmit nationwide synchronized pages. The MCMS 106 can transmit a message and message request to a serving satellite network controller, wherein the controller simply relays the message to the appropriate satellite and the CCAD-RAAM user receives the message or command in the same manner as heretofore described. The possibilities are numerous both in terms of gaming and gambling applications and as applied to other application specific devices and systems, as the present methodology utilizes existing communications technology to create a new short messaging communications paradigm. In fact, one of the major problems in one way paging networks that is solved with CCAD-RAAM is that, under conventional paging procedure, in order for a pager user to receive a message, an entire network systems resources has to be used to transmit a synchronized page. The reason for this is that the paging company has no way to know where the pager user is, so a blanket page of an entire service region has to be performed. With CCAD-RAAM, the MCMS knows the current location of the CCAD-RAAM communicator that is equipped with a paging receiver. The MCMS simply forwards the message to the pager user in the same footprint or serving area as the current serving cellular system. In this way, the paging company can offer nationwide paging, local rate charges, for the paging company does not have to tie up so much message processing and transmission capacity to perform large blanket pages.

Referring now to FIG. 3, the CCAD-RAAM data packet is preferably configured to appear like an AMPS-TACS RECC analog origination packet that contains anywhere from eight to thirty two dialed digits. However, what is important to note here is that none of the depicted digit fields are dialed by the user, as is the normal procedure in a conventional origination scheme. The digits contained in words H[1] through H[4] are automatically derived from the CCAD-RAAM communications software and application specific device derived status conditions. For example, in H[1] word 131, which "looks" like a D word or first word of the called address when analyzed by the base site and MSC, the data is interpreted as follows: Digits 1 through 4 138 represent the RAAM feature activation code. Digit 5 is the first significant information status four bit field that can represent and indicate to the MCMS the specific application specific service that the CCAD-RAAM communications device is attributed to. Digits 6 through 8 140 can contain a two way paging canned response code, or a GPS device code such as velocity or altitude indicators. This can also indicate to the MCMS and ultimately to the specific facilitator/bearer that the CCAD-RAAM user is at a specific location, for example, on foot or inside a vehicle. In one scenario, the CCAD-RAAM communicator 275, as depicted in FIG. 9B, can be used as a handheld communications device that contains a GPS receiver with an attached external keypad 296 for sending alpha messages. This same device can be placed in a docking stirrup mount and inside a motor vehicle that is configured to include an external GPS and cellular antenna interface. One the CCAD-RAAM communicator is

placed in the stirrup, the internal software means of the CCAD-RAAM communicator can detect if the communicator is in fleet management mode or personnel management mode and change the status of the digit fields 6 through 8 contained in H[1] word 131 as depicted in FIG. 3.

In reference now to FIG. 3, H[2] word 132 can contain the telephone number of a person who paged the CCAD-RAAM communicator user. Digits 1 through 7, 122 represent a two way paging seven digit response number 122. This number is sent as in all normal pages when the caller seeks to be called by the pager user. In this way, all manner of services such as paging, remote monitoring, tracking, etc., can be derived from this simple CCAD-RAAM procedure. For example, if the pager user is called by a person with a long distance number, digits 6 through 8 in H[1] word 140 can also be used to carry this area code information. Dig 8, 118 in H[2], also conventionally recognized as the E word or second word of the called address, but in no way utilized as an originating called address by the CCAD-RAAM user, contains the "canned" two way paging response code that instructs the MCMS, and more specifically the two way paging facilitator/bearer, that the CCAD-RAAM user wants to send this response to the paging caller. Message 6 as indicated in the H[2] word field tells the two way paging facilitator/bearer to automatically call the pager user caller, and play back a previously stored voice message: "I will call you at home tonight after five o'clock", for example. The functionality and flexibility of this scenario is extremely broad. Such services as certified response paging can be implemented and may be important in gaming and gambling applications or other applications, for example where a business can invoke paging responses to a sales force in the field, and have automatic page responses logged into a computer database tied into a PSTN dial in direct service provided by the two way paging facilitator bearer. The CCAD-RAAM two way paging device is programmed to automatically respond to received pages without the need of a CCAD-RAAM two way paging user interface. H[3] word 123, conventionally identified by the serving cellular system as the F word of the called address, but in no way used by the present invention or the CCAD-RAAM user as an originating called address, contains global positioning longitude and latitude relative positioning status information. Digits 1 through 4, 141 contain GPS relative position status fields. Digits 5 through 8, 142 may contain motor vehicle, home arrest or personnel specific status fields for example. H[4] word which is conventionally identified by the base site and mobile switching center as The G word of the originating called address, but in no way used by the present invention or CCAD-RAAM user in that way. Digits 1 through 5, 143 contain GPS relative position information. Digits 6 through 8, 160 contain other application specific information such as automobile security system alarm status, and any other CCAD-RAAM application specific system status.

In FIG. 4, the CCAD-RAAM MSC data analysis procedure is illustrated. The CCAD-RAAM terminal or communicator 100 transmits a packet 103 that contains one to four H-words, or one CDMA 842 bit 4800 bps burst, that also contains the identical listed packet and user information, and is received by the base site antenna 101 and base site 102, relayed to the serving MSC interface 144, where the data is analyzed 145. In this example, the heretofore mentioned data only special mobile identification number (MIN) is not detected 147, therefore the data is discarded, and the procedure is exited 148. If the CCAD-RAAM data only MIN is detected, the CCAD-RAAM procedure continues, 149. The

CCAD-RAAM electronic serial number is detected and validated 150. The remote access application messaging (RAAM) parameter is executed 151. The CCAD-RAAM MCMS service control point (SCP) home location register (HLR) is identified by the MSC 152, and data conversion is initiated. Conversion is completed, thus codifying the CCAD-RAAM MIN as SS7 IS-41 identification and routing data bits 153. The MSC service control point (SCP) sets up initial SS7 signaling transfer point, global, cluster and signaling system network node identification and routing codes 154 and the message is sent on an assigned SS7 link and exits the MCS/SCP 155. The CCAD-RAAM data packet arrives at the master central monitoring station's service control point (MCMS/SCP) 106. The CCAD-RAAM data is analyzed, and a routing instruction or acknowledgment signal 121 is sent to the current serving MSC via the nearest SS7 signal transfer point (STP) 109. The serving MSC receives the acknowledgment at the SS7 interface 144, and is instructed to send either a voice acknowledgment to the CCAD-RAAM user 161, or a tone acknowledgment, or a conventional overhead response on the FOCC channel to the CCAD-RAAM communicator 100, as is normally performed in this case of any action initiated by a mobile telephone during an order qualifier 000 or order code 0000 routine such as autonomous registration, origination or order response routine, that requires an instruction code to be present in the B-word of the RECC 48 bit CCAD-RAAM message. The CCAD-CDMA data burst contains a message number information field that corresponds to order and order qualifier codes, for example, and acts as a base site and MSC instruction code. There are four principal ways that a CCAD-RAAM communicator 100 can receive automatic commands, alpha-numeric messages, and encoded messages. They are normal paging 156, satellite signals 157, point to omni point or point to point cell broadcast signals 108, that are specified for future personal communication system (PCS) platforms, and DCCH digital signals 163, so specified in documents such as IS-54/136 TDMA, IS-95 CDMA as well as others.

Referring now to FIG. 5, a master central monitoring station data processing and management elements and terminals are shown. Once the CCAD-RAAM data packet is received at the CCAD-RAAM home location register (HLR) 171, uniquely collects subscriber data 237 that contains CCAD-RAAM MIN numbers 260, and RAAM activation messaging codes 264. Each of these codes is a special activation code that instructs the MSC to send the active data to the CCAD-RAAM MCMS. Once the data is sent, the CCAD-RAAM HLR 171 receives the data, and the CCAD HLR V.325 data service unit readout and application specific data capture terminal 162 captures, analyzes and stores the data. Normally, any received data is not construed as application specific messaging that arrives to the HLR as a result of a game play, a game wager, payoff, or the like, or other application specific messages such as a two way paging message, a fleet management message, a continuous electronic monitoring message used for home arrest, or a stationary communicator message that contains system status information such as electrical meter reading, or security system reading 228, for example. The CCAD-RAAM HLR data service unit 162, in a continuous duplex communication data exchange 234, instructs the CCAD-RAAM HLR 171 to send back an appropriate MSC response code that tells the MSC to complete the CCAD-RAAM message transaction with either a tone recording, a pre-recorded message, or simply an overhead completion message as heretofore described. Once the CCAD-RAAM data service unit termi-

nal 162 receives the data, it relays it to the CCAD-RAAM comparative data base (CDB) terminal 169 via the CCAD-RAAM decoder (DEC) terminal that decodes the received encoded data, and the data reception and distribution (DRD) terminal 167. All CCAD-RAAM MCMS data processing terminals preferably process and communicate with one another in UNIX 166, a very versatile and efficient computer and data base language. Once the CCAD-RAAM data is decoded, it is sent to the CCAD-RAAM data reception and distribution (DRD) 167 terminal that either stores the received information, or in conjunction with the comparative data base (CDB) 169, relays the data to the facilitator/bearer. Once the facilitator bearer responds with a message and message request, the DRD terminal 167 sends the request to the CDB terminal 169, the CDB examines the files, the various data attributes are appended to 229 such as message routing instructions and destination codes, and the message is transferred to the action data base (ADB) 119 that determines which network services, derived from the data attributes, be it paging, cell broadcast, satellite or DCCH, the message will be sent to.

Referring to FIG. 6, a detailed illustration of various CCAD-RAAM MCMS data management, processing and CCAD-RAAM network element communications methodology is shown. The CCAD-RAAM data packet 107 that is transmitted by the CCAD-RAAM communicator 100 and recognized and treated by the serving MSC as an origination packet with normal called address D through G 117, is actually an application specific data packet that contains software derived H-words 235 that are not created by any dialed digit entry from a mobile telephone keypad. The CCAD-RAAM data packet is created by the software means contained with the communicator 100. The data may be derived from, for example, (1) received messages sent from the MCMS via heretofore mentioned network and air-interface protocols, (2) application specific device status changes detected by the CCAD-RAAM communicator software, such low battery power and other internal communicator maintenance status (3) simple entered institutions from the user, such as scrolling a menu button on the CCAD-RAAM communicator, choosing the selection, for gaming, gambling, or other application such as for two way paging and fleet management and then simply pressing send, (4) systems that are separate but physically connected to the CCAD-RAAM communicator such as card games, roulette games, chess games, or other system such as motor vehicle anti-theft alarms, external antennas, and other such remote sensing devices, and (5) internal sub-systems contained within the CCAD-RAAM communicator such as separate but physically integrated in the CCAD-RAAM communicator enclosure such as radio receivers designed to detect the presence or lack of presence of home arrest leg band and wrist band radio propagation signals. None of this data is derived from the CCAD-RAAM user directly dialing each digit that resides in the digit spaces contained in the H-words. The CCAD-RAAM data packet 107 is created, compiled completely automatically, with or without direct CCAD-RAAM user interface.

Once the CCAD-RAAM packet 107 is transmitted to the base site antenna 101, relayed by the base site 102 to the serving MSC, the unique CCAD-RAAM method provides a new operating paradigm. The CCAD-RAAM data packet 107 is received via the heretofore mentioned SS7 IS-41 network elements 172, processed in the heretofore mentioned, by the aforementioned CCAD processing terminals: CCAD-HLR data base V.35 DSU readout and capture terminal 162, the CCAD-RAAM decoder terminal 168, the



data reception and distribution terminal 167, the comparative data base terminal 169, and action data base terminal 119, preferably in common UNIX data management and processing language 166. The facilitator/bearer can be a gaming or gambling service, message waiting indicators, broadcast information services, electronic mail, and the like. Other services and applications, for example, for which the disclosed method may be used include motor vehicle fleet management, motor vehicle anti-theft, and topographical coordinance systems that provide location data to bearer service processing centers, also known as central monitoring stations. Currently these services are offered by way of sending data packets over service control point (SCP) 120 on an SS7 network, with its SS7 network addresses stored in the host systems signaling transfer points (STP) 109, or it can be communicated with via T1/DSO signaling protocols 105, via the PSTN. Also, the facilitator/bearer 120 can be communicated with via the internet utilizing a data packet frame relay system 114, or a direct in dial (DID) system 254 located at the MCMS. In fact, the paging network system can be communicated with via the aforementioned methodology. The paging network controller (PNCC) 221 may also be accessed via X.25 protocol as well. X.25 is yet another PSTN circuit switched or packet switched signaling protocol.

Referring to FIG. 7, a CCAD-RAAM virtual network overlay for wireless gaming and gambling, or other application specific application is shown. The CCAD-RAAM MCMS 106 can be located anywhere in the world. For example, in one scenario the MCMS 106 is located in California and the current CCAD-RAAM user is located in a serving cellular system operating in New York City. The New York MSC 232 is connected to multiple cellular antennas 101 and base sites 102 that receive the CCAD-RAAM data packet 103 transmitted by the user's communicator 100. In this scenario, the paging system, represented by numerous transmission towers 220, controlled by nearby network controller 221, are connected to the PSTN network and SS7 network by various redundant SS7 links 115. The CCAD-RAAM signaling network is part of the national and international wireline signaling network cloud 262 that symbolically contains numerous SS7 network, T1 network, X.25 network and other PSTN network nodes, interconnected by various physical links and various logical network recognition and routing codes contained with various PSTN standards that include but are not limited to SS7 IS-41 compatible signaling transfer points (STP) 109. The CCAD-RAAM virtual network can be fully deployed on a national and/or an international scale. One requirement for SS7 and IS-41 is that every SS7 network element, be it an STP 109 or an HLR 171 or other elements, must be fully redundant in that each element must be duplicated. The CCAD-RAAM HLR 171 located at the MCMS must also have a duplicate located at some other location: HLR 165 in another city, for example. The duplicate HLR/SCP must not be affected by some power problem or other technical issue that can affect the co-located HLR at the MCMS, and visa-versa. The IS-41 redundancy requirement also creates the need to have redundant STPs 109 wherever an STP site is so designated.

In FIG. 11, it is seen that the MCMS 106 can be connected on the SS7 network to any MSC utilizing IS-41 mobile application part (MAP) protocol parameters. Each MSC, be it a New York serving MSC 232, a Northern California located MSC 231, a Southern California MSC 233, or a Dallas MSC 238, are elements on an SS7 network. Each has its own multiple base site antenna locations 101 and base site locations 102. Each MSC is physically connected to a

nearby STP 109. The MCMS 106 also can communicate with the World Wide Web (WWW) 230 via the internet, since it preferably utilizes a frame relay system. Therefore the MCMS may be a point-of-presence on the internet. In this way, the CCAD-RAAM virtual network can access e-mail, world wide web Internet file transfer point (FTP) data bases and other network entities. The CCAD-RAAM user can therefore send and receive e-mail in real time.

Referring to FIG. 8, this simple diagram illustrates the messaging that takes place between a serving MSC 104 and the CCAD-RAAM MCMS 106. The SS7 network elements act as destination points for the CCAD-RAAM SS7 IS-41 mobile application part (MAP) messaging. The remote access application message request invoke 255, as part of data message that is sent from the MSC 104, begins the transaction between the serving MSC 104 and the MCMS 106. The CCAD-RAAM message passes through a plurality of STPs 109 as a RAAMREQINV 257. Once received by the MCMS 106 and its HLR 171, the response, remote access application message data response RAAMDRES 258 is construed as part b 256 and completes the SS7 IS-41 transaction. Another important feature of the CCAD-RAAM messaging system is the each transaction may be a measured and billable event that is applied to the CCAD-RAAM user's monthly bill.

Referring now to FIG. 10, this illustration depicts separate examples of specific RAAM activation codes that cause the CCAD application data to be automatically treated as an outbound application specific message. Each code can activate the RAAM feature specific to different switch platforms manufactured by Ericsson, AT&T, Motorola and other switching platform manufacturers operating in the world today. All cellular switches operate essentially the same way, for their operating specifications adhere to various Interim operations standards set forth by the Federal Communication Commission (FCC), the Telephone Industry Association (TIA), Electronic Industry Association (EIA) and others. Each RAAM code specifically causes its host switch to allow the maximum amount of data words and characters to be routed to the CCAD MCMS. Depending upon how the host cellular system is configured, be it 16 digit dialing, 28 digit dialing, 32 digit dialing or a possible full 40 digit dialing, the depicted codes will allow maximum character quantity data packet routing. Digit capacity parameters are solely controlled by how the base site radios are programmed and designed. It is the cellular base site radios that determine the amount of data to be passed to the switch via the control channels and digital access channels. Therefore, these CCAD-RAAM codes allow for the maximum capacity allowed by the base site radio and its embedded operations program that dictate data capacity bandwidth allowable via the control channels. Therefore, the RAAM codes must tell the switch to route the application specific data packet to the maximum character quantity allowed.

Referring to FIG. 3, the mobile identification number 261, 128 and 133 as depicted tell the switch to route the CCAD packet to its intended destination on the SS7 network. The SS7 service control point (SCP) or switch point (SP) appends global, cluster and node codes to the packet, converts it to 56 KBPS wideband and frame relay protocols and then points it towards the SS7 network that facilitates its ultimate destination: the CCAD master central monitoring station. The H[1] word 131 carries the RAAM activation codes 138 that are four digits or symbolic characters, that are analyzed by the switch, and then cause the switch to route the entire five to seven word data packet to the MCMS.

With reference now to FIG. 10, this illustration depicts the various activation codes contained in the CCAD H-word

number that will activate the RAAM features for maximum data packet capacity, and routing efficiency. All five examples of the CCAD-RAAM H-words 240 are the first application specific words that follow the A, B and C words as heretofore discussed. H[1] word for AT&T switches 173, for example, may contain a RAAM activation code 280 that can cause the RAAM feature to be activated, that so designates this CCAD origination data word packet as a distinct and different class of cellular data service that causes the host AT&T switch to translate and convert the application data contained in the dialed digit fields sent from the CCAD application specific communicator to SS7 IS-41 compatible data packets. Further, the translation and activation of the RAAM feature also causes the packet to be assigned to an SS7 global, cluster and node routing code. This code is attached to the CCAD-RAAM SS7 packet to be sent to the CCAD MCMS-HLR/SCP via the SS7 network. The code contained in this H-word 280 is but one example of any code so designated by the operating cellular system and switch manufacture that can cause the CCAD-RAAM application specific message to be sent on an SS7 network, a X.25 network, or any other PSTN network to the CCAD MCMS, and later relayed from the CCAD MCMS to any of the designated application specific facilitators, such as a gaming casino. Other H[1] word examples, such as the H[1] word 276 that contains a RAAM code 281, activate the RAAM feature in a Motorola switch; or the H[1] word 277 that contains a RAAM code 282 that activates the RAAM feature in the Nortell switch, or the H[1] word 278 that contains a RAAM code 283 that activates the RAAM feature in the Siemens switch, or the H[1] word 279 that contains the RAAM code 284 that activates the RAAM feature in the Erricson switch, are all possible codes that can cause the Remote Access Application Message feature to be activated, sent and processed by the CCAD master central monitoring station. These possible RAAM activation codes cause the CCAD data packet to be sent to the MCMS and treated as a gaming or gambling related message, instruction, payoff or the like, or used in another application, such as a two-way paging message, a fleet management message that contains global positioning information for example, or any other possible application specific message that is originally manipulated by CCAD communicator software means, transmitted during control channel origination procedures and contained within dialed digit fields, but in fact are no longer dialed digits in actuality. This provides a complete method for two-way data communication for cellular and personal communication system communications and is particularly useful for wireless gaming, gambling and other application specific messages.

In FIG. 9B, a dialed digit group 164 that exists on almost all cellular mobile stations on this CCAD-RAAM communicator 275, preferably cannot be used with the described communicator software means to encode or encrypt CCAD-RAAM data. Preferably, this keypad group 164 cannot be utilized to send any CCAL-RAAM data packet information at anytime, thereby creating a unique automatic messaging system from the communications means inception point to the reception point represented by the CCAD-RAAM master central monitoring station, which may utilize any serving mobile switching center as a CCAD-RAAM messaging relay point in a completely unique and transparent manner.

The herein described means and methods of CCAD-RAAM combined with the data compression encoding and decoding method truly creates a separate but transparent wireless gaming and gambling methodology, which is also useful in other two way communication systems utilizing

conventional and currently operating cellular, paging, and satellite systems.

Additional objects and advantages will readily occur to those skilled in the art. Therefore the invention in its broader aspects is not limited to the specific details, methods, representative devices, and illustrative examples shown and described. Accordingly, departures may be made from such details without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalents.

What is claimed is:

1. A method for communicating gaming messages between a gaming terminal and a central monitoring station over a telecommunications network that includes a voice channel and a control channel, wherein the voice channel conveys data messages and the control channel conveys control messages that manage access to and use of the voice channel, the method comprising:

- a) obtaining a message at the gaming terminal, the message comprising application specific data related to gaming;
- b) encoding the message in a sequence of digits associated with a control message to create an encoded message;
- c) encoding a remote feature control request in the sequence of digits associated with the control message to invoke the forwarding of the sequence of digits, including the encoded message, by a local telecommunications switching center upon detecting the remote feature control request;
- d) transmitting the control message and associated sequence of digits to the local telecommunications switching center over the control channel, bypassing the voice channel;
- e) detecting the remote feature control request at the local telecommunications switching center;
- f) forwarding the remote feature control request and the encoded message over a communications channel to the central monitoring station in response to detecting the remote feature control request; and
- g) decoding the encoded message to retrieve the application specific data related to gaming.

2. The method of claim 1, wherein obtaining a message at the gaming terminal comprises receiving user input comprising the message at the gaming terminal.

3. The method of claim 1, wherein encoding the message in a sequence of digits associated with a control message comprises encoding the message in a sequence of digits associated with a call origination message.

4. The method of claim 3, wherein encoding a remote feature control request in the sequence of digits associated with the control message to invoke the forwarding of the sequence of digits, including the encoded message, by a local telecommunications switching center upon detecting the remote feature control request, comprises encoding a remote feature control request in the sequence of digits associated with the call origination message to invoke the forwarding of the sequence of digits, including the encoded message, by the local telecommunications switching center upon detecting the remote feature control request.

5. The method of claim 4, wherein transmitting the control message and the associated sequence of digits to a local telecommunications switching center over the control channel, bypassing the voice channel, comprises transmitting the call origination message and the associated sequence of digits to a serving mobile switching center (MSC) in a cellular radio telecommunications network, over the control channel, bypassing the voice channel.

6. The method of claim 5, wherein detecting the remote feature control request at the local telecommunications switching center and forwarding the remote feature control request and the encoded message over a communications channel to the central monitoring station in response to detecting the remote feature control request comprises detecting the remote feature control request at the serving MSC and forwarding the remote feature control request and the encoded message over at least one inter cellular serving area link between the serving MSC and the central monitoring station in response to detecting the remote feature control request.

7. The method of claim 6, wherein the inter cellular serving area link between the serving MSC and the central monitoring station operates according to the signaling system 7 (SS7) protocol standard.

8. A method for communicating gaming messages between a cellular mobile radio (CMR) gaming terminal and a central monitoring device over a cellular telephone network that includes wireless digital traffic channels and inter cellular serving area network channels, wherein the digital traffic channels comprise data traffic channels for transmitting voice and data signals and a control channel for transmitting control signals that manage access to and use of the data traffic channels, the method comprising:

- a) inserting a message comprising application specific data relating to gaming in a sequence of digits to be transmitted by the CMR gaming terminal in conjunction with a transmission of a call origination message;
- b) encoding a remote feature control request in the sequence of digits to invoke the forwarding of the sequence of digits, including the message, by a serving mobile switching center (MSC) upon detecting the remote feature control request;
- c) transmitting the call origination message and the sequence of digits to the serving MSC over the control channel, bypassing the voice channels, the call origination message specifying a mobile identification number (MIN) identifying the CMR gaming terminal;
- d) analyzing the call origination message and the sequence of digits at the serving MSC and detecting the remote feature control request;
- e) forwarding the remote feature control request and the message to the central monitoring device over an inter cellular serving area network channel, in response to detecting the remote feature control request, the inter cellular serving area network channel determined by the MIN;
- f) receiving the remote feature control request and the message at the central monitoring station; and
- g) extracting the message comprising application specific data relating to gaming.

9. The method of claim 8, wherein extracting the message comprising application specific data relating to gaming further comprises forwarding the application specific data relating to gaming to an gambling facility.

10. The method of claim 9, comprising, before inserting a message comprising application specific data relating to gaming in a sequence of digits, receiving user input comprising the message at the CMR gaming terminal.

11. The method of claim 8, wherein the message comprises a response to a gaming command from the central monitoring device received via a paging network broadcast channel.

12. The method of claim 8, wherein the message comprises a response to a gaming command from the central monitoring device received via a satellite communications channel.

13. The method of claim 8, wherein the message comprises a response to a gaming instruction received from the central monitoring device over a time division multiple access (TDMA) digital broadcast control channel.

14. The method of claim 13, wherein the TDMA digital broadcast control channel operates in accordance with the global system for mobile communications (GSM) standard.

15. The method of claim 8, wherein the message comprises a response to a gaming instruction received from the central monitoring device over a code division multiple access (CDMA) digital broadcast control channel.

16. A method for communicating gaming messages between a gaming terminal and a central monitoring station over a mobile satellite communications network that includes a voice channel and a control channel, wherein the voice channel conveys data messages and the control channel conveys control messages that manage access to and use of the voice channel, the method comprising:

- a) obtaining a message at the gaming terminal, the message comprising application specific data related to gaming;
- b) encoding the message in a sequence of digits associated with a control message to create an encoded message;
- c) encoding a remote feature control request in the sequence of digits associated with the control message to invoke the forwarding of the sequence of digits, including the encoded message, by a local mobile satellite communications switching center upon detecting the remote feature control request;
- d) transmitting the control message and associated sequence of digits to the local mobile satellite communications switching center over the control channel, bypassing the voice channel;
- e) detecting the remote feature control request at the local mobile satellite communications switching center;
- f) forwarding the remote feature control request and the encoded message over a communications channel to the central monitoring station in response to detecting the remote feature control request; and
- g) decoding the encoded message to retrieve the application specific data relating to gaming.

17. The method of claim 16, wherein the step of obtaining a message at the gaming terminal comprises receiving user input comprising the message at the gaming terminal.

18. The method of claim 16, wherein encoding the message in a sequence of digits associated with a control message comprises encoding the message in a sequence of digits associated with a call origination message.

19. The method of claim 18, wherein encoding a remote feature control request in the sequence of digits associated with the control message to invoke the forwarding of the sequence of digits, including the encoded message, by a local mobile satellite communications switching center upon detecting the remote feature control request, comprises encoding a remote feature control request in the sequence of digits associated with the call origination message to invoke the forwarding of the sequence of digits, including the encoded message, by the local mobile satellite communications switching center upon detecting the remote feature control request.

RELATED PROCEEDINGS APPENDIX F

None.